

FIG. 1A

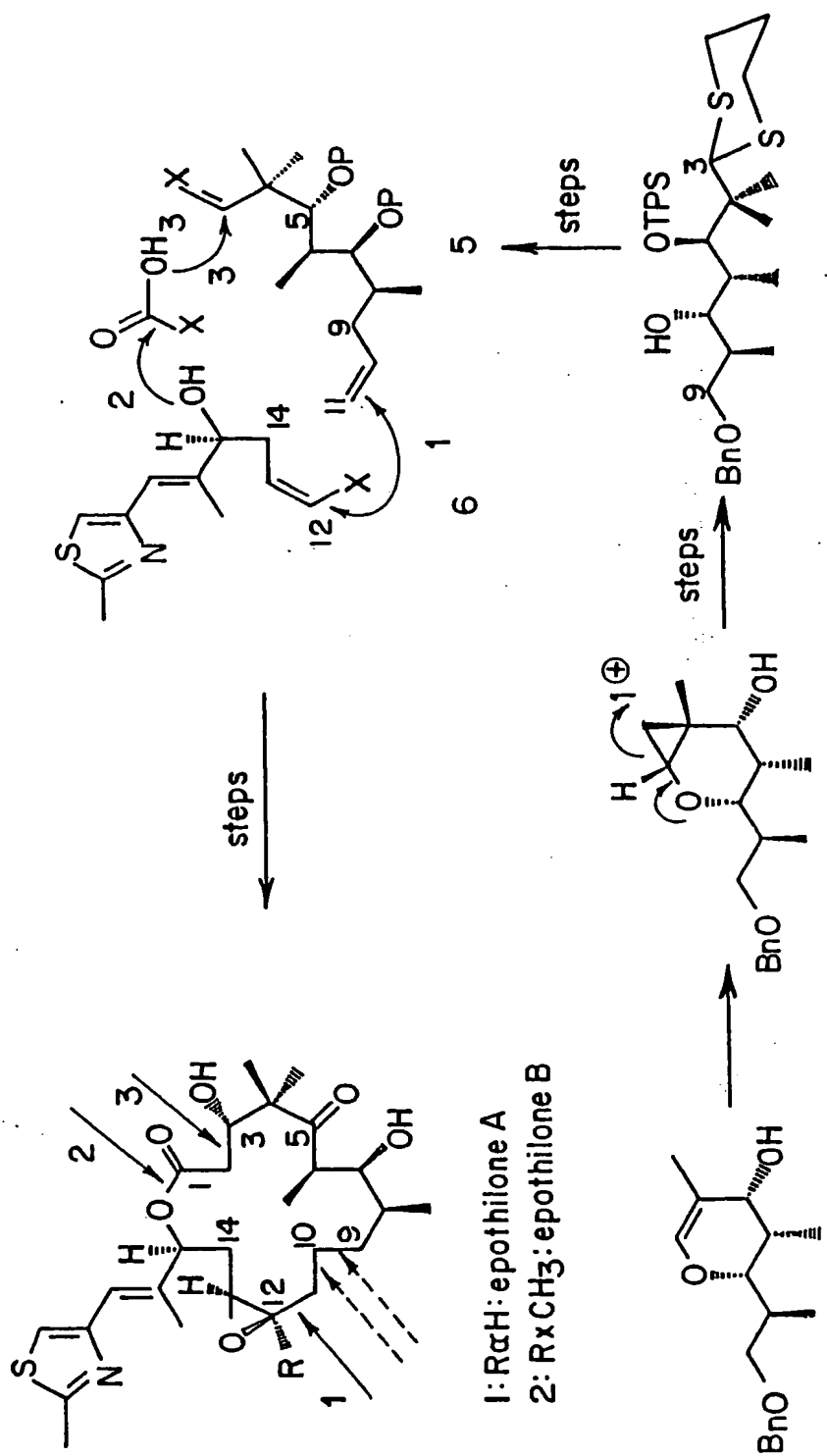


FIG. 1B

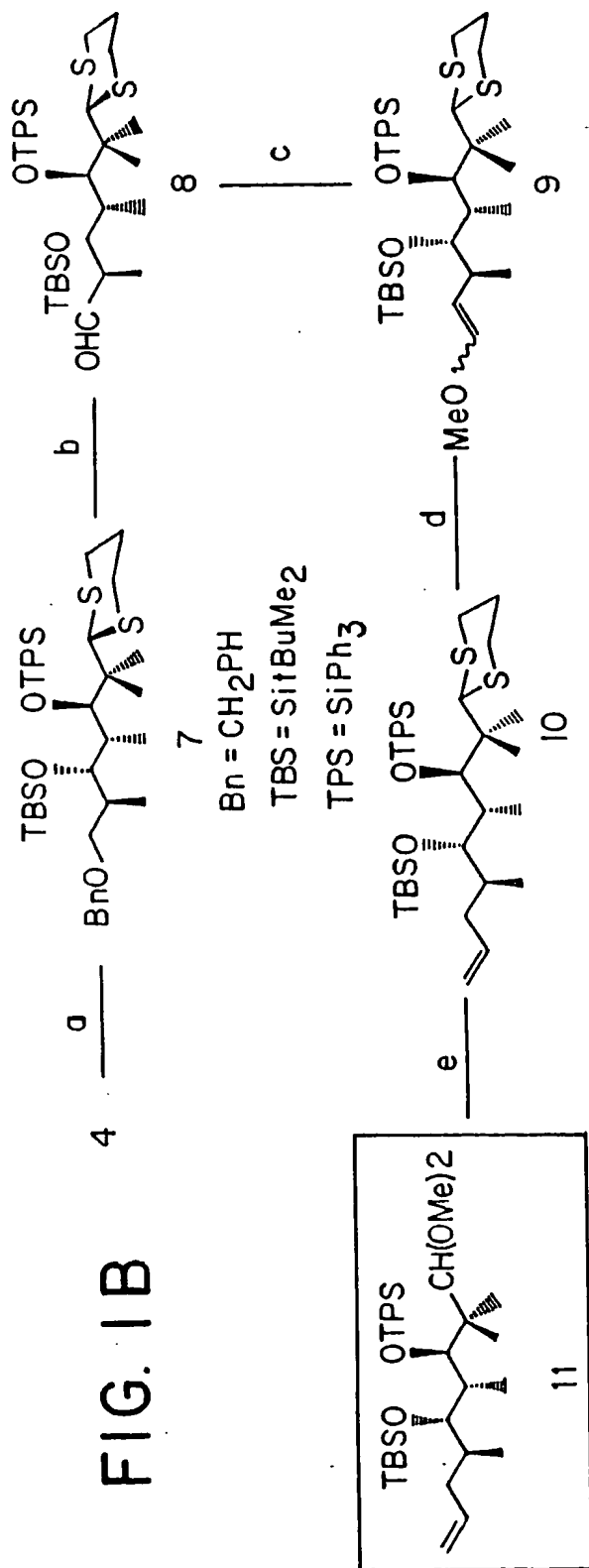


FIG. 12B

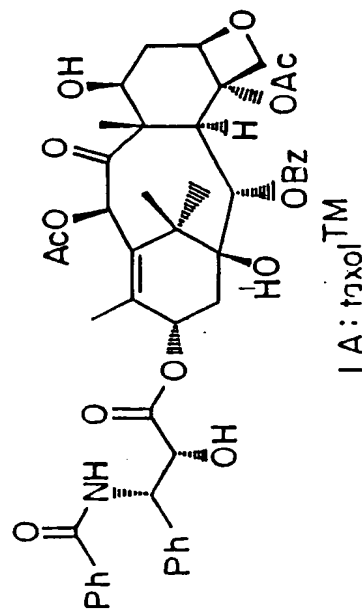


FIG. 12A

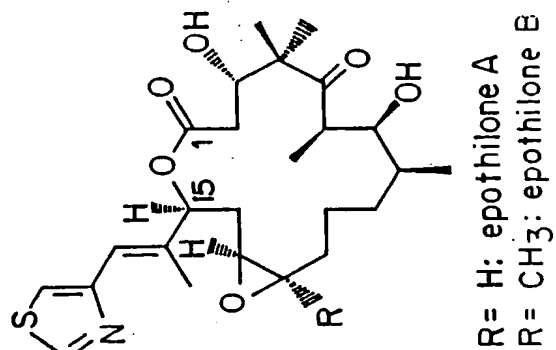


FIG. 2

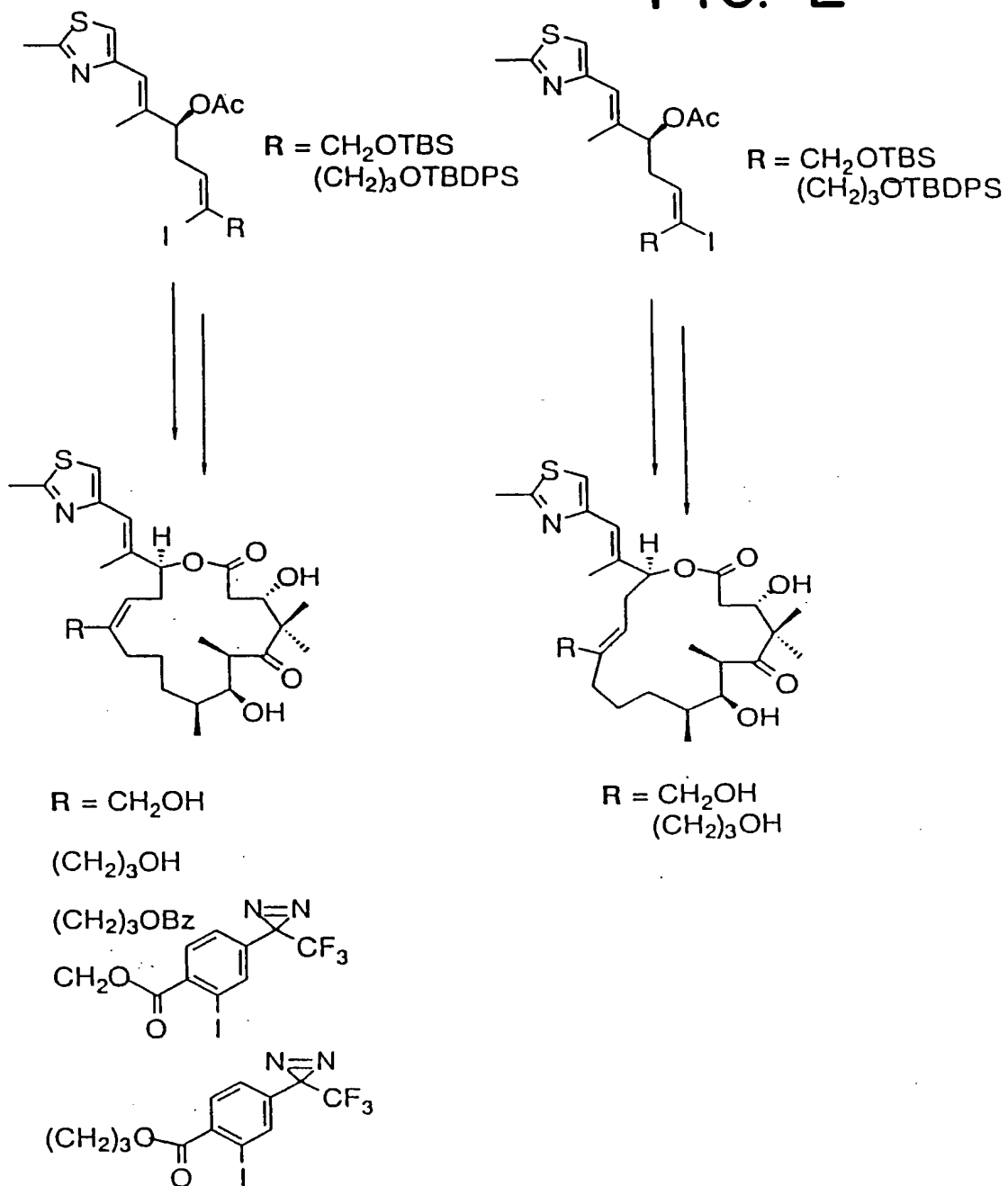




FIG. 3B

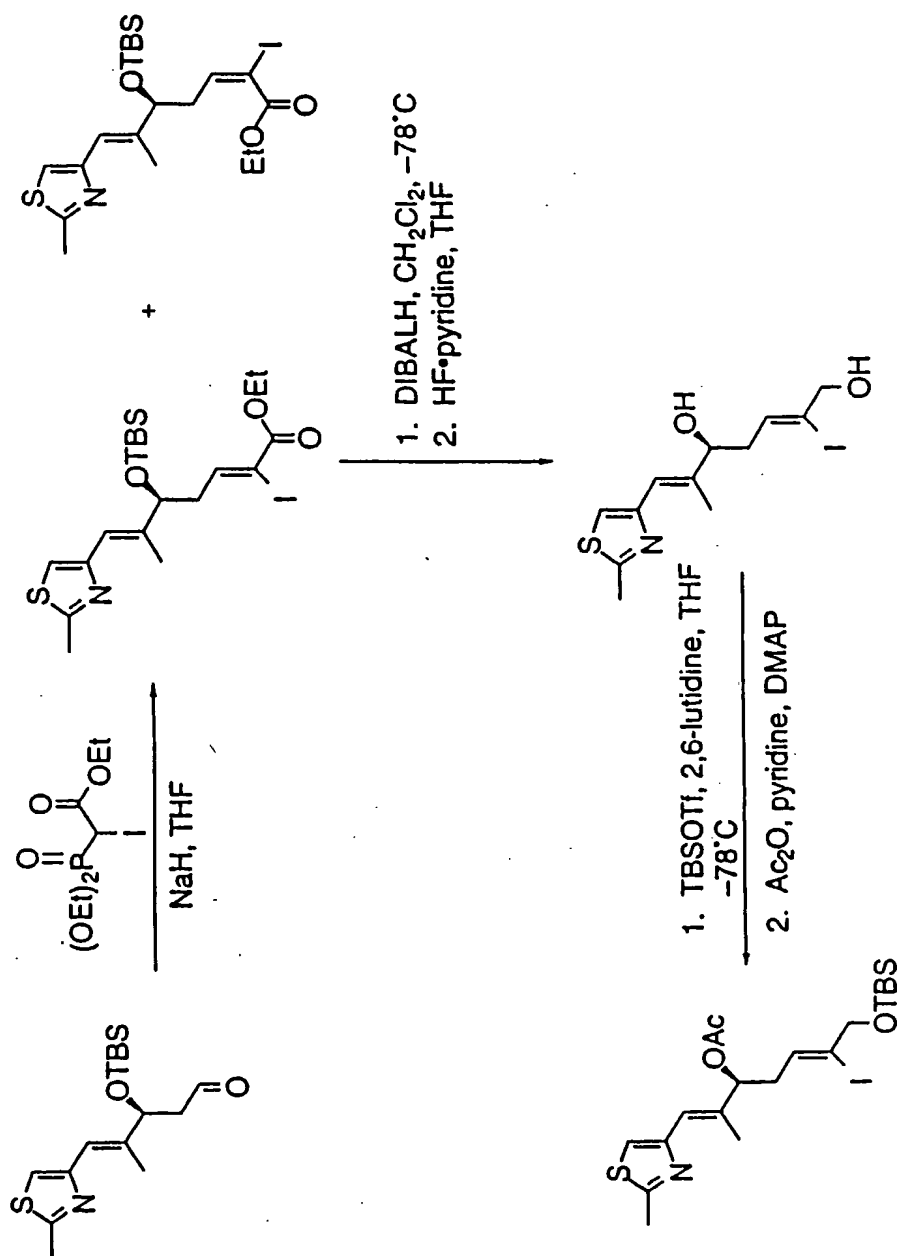
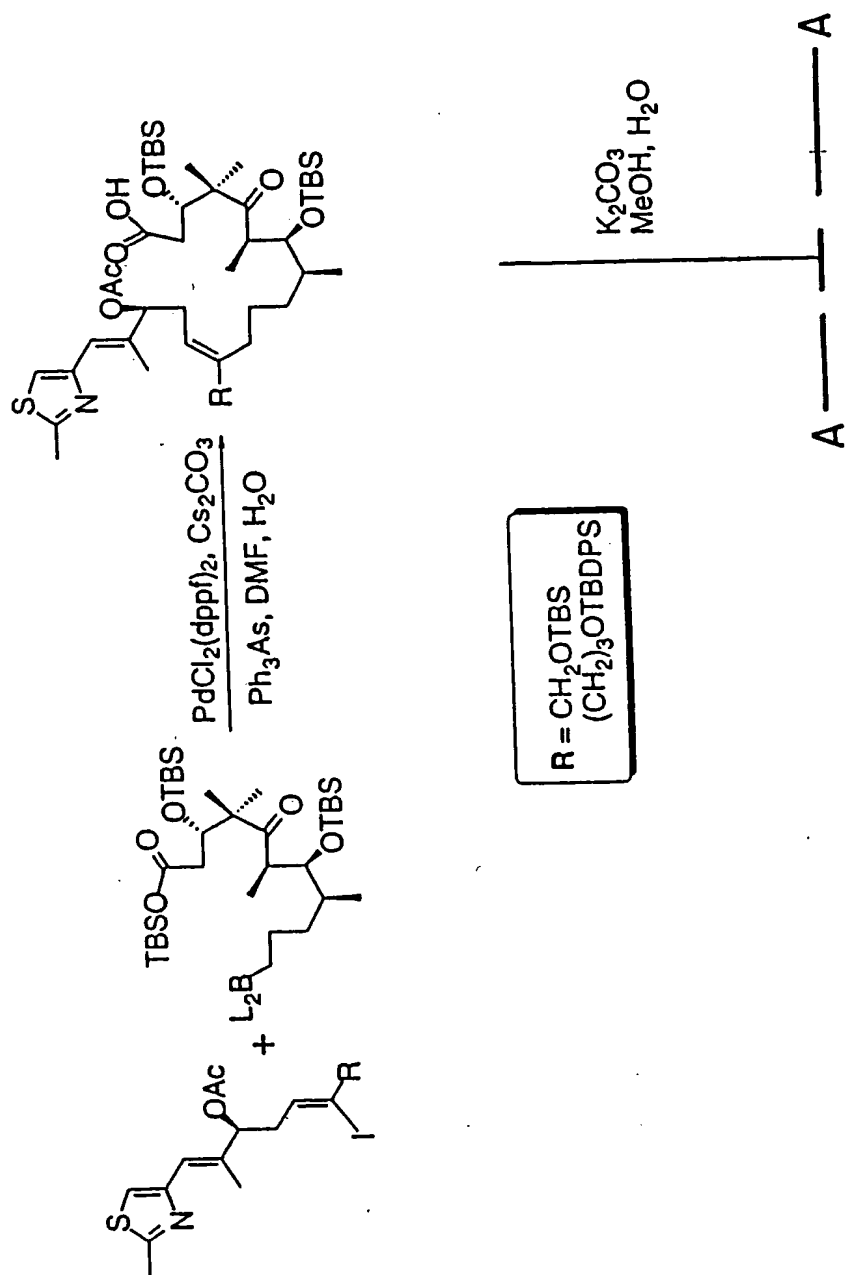


FIG. 3C



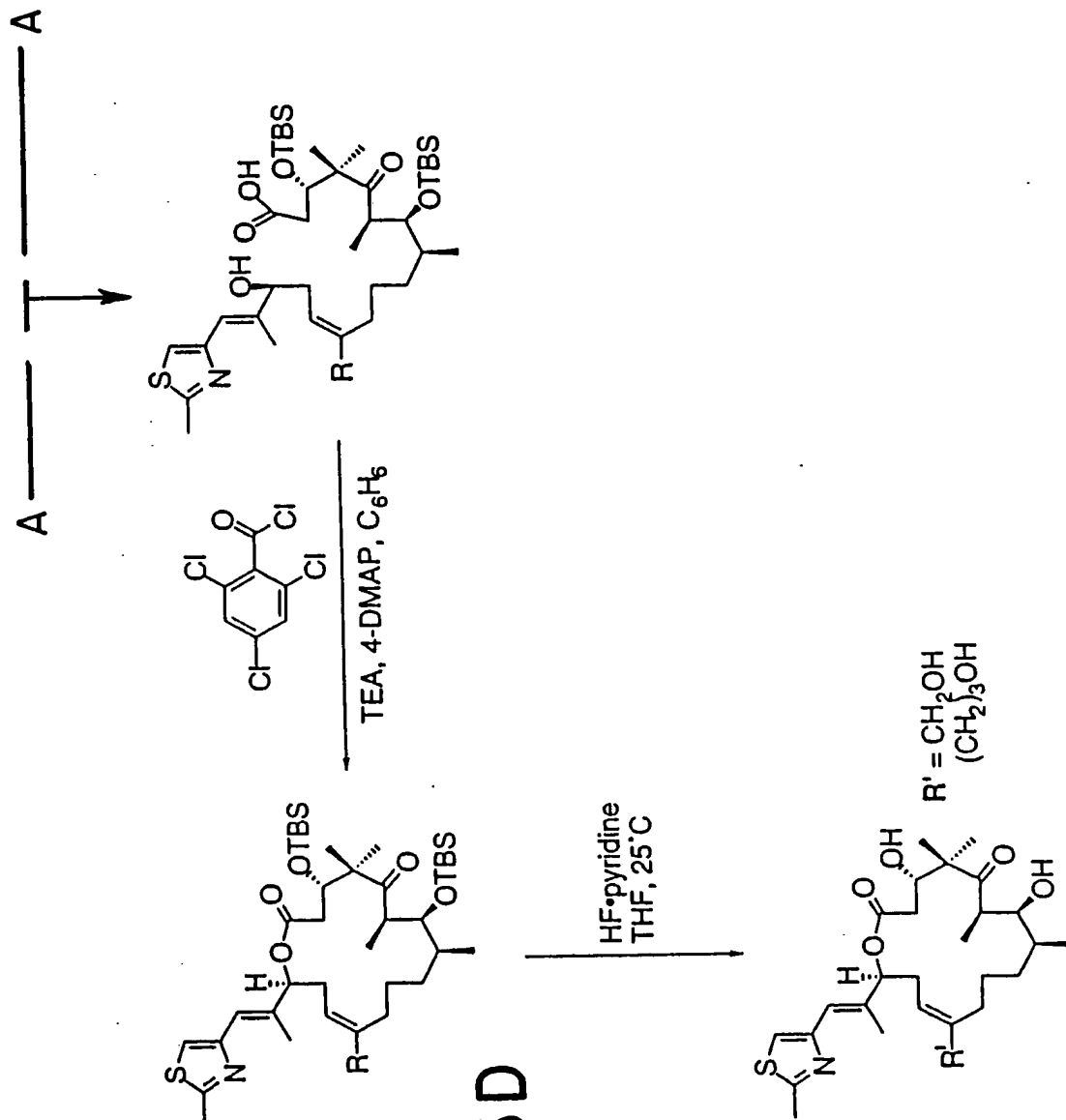


FIG. 3D

FIG. 3

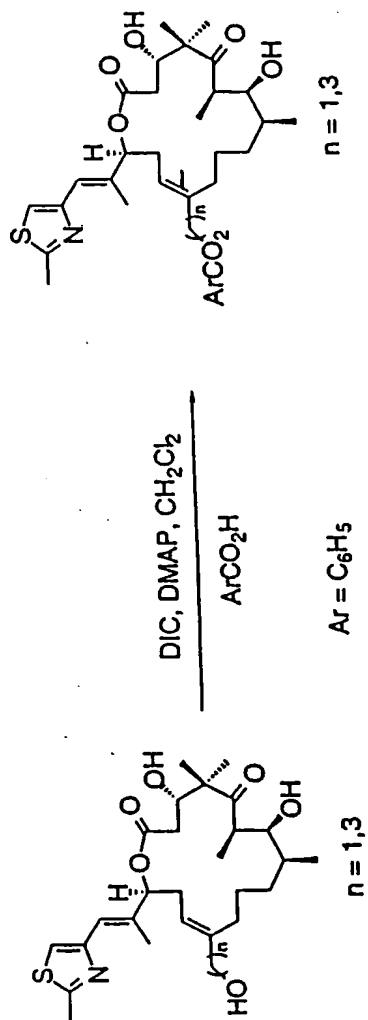


FIG. 3F

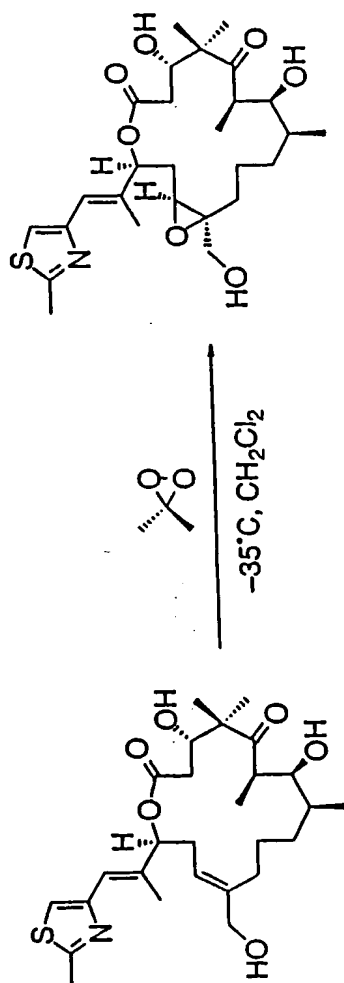


FIG. 4A

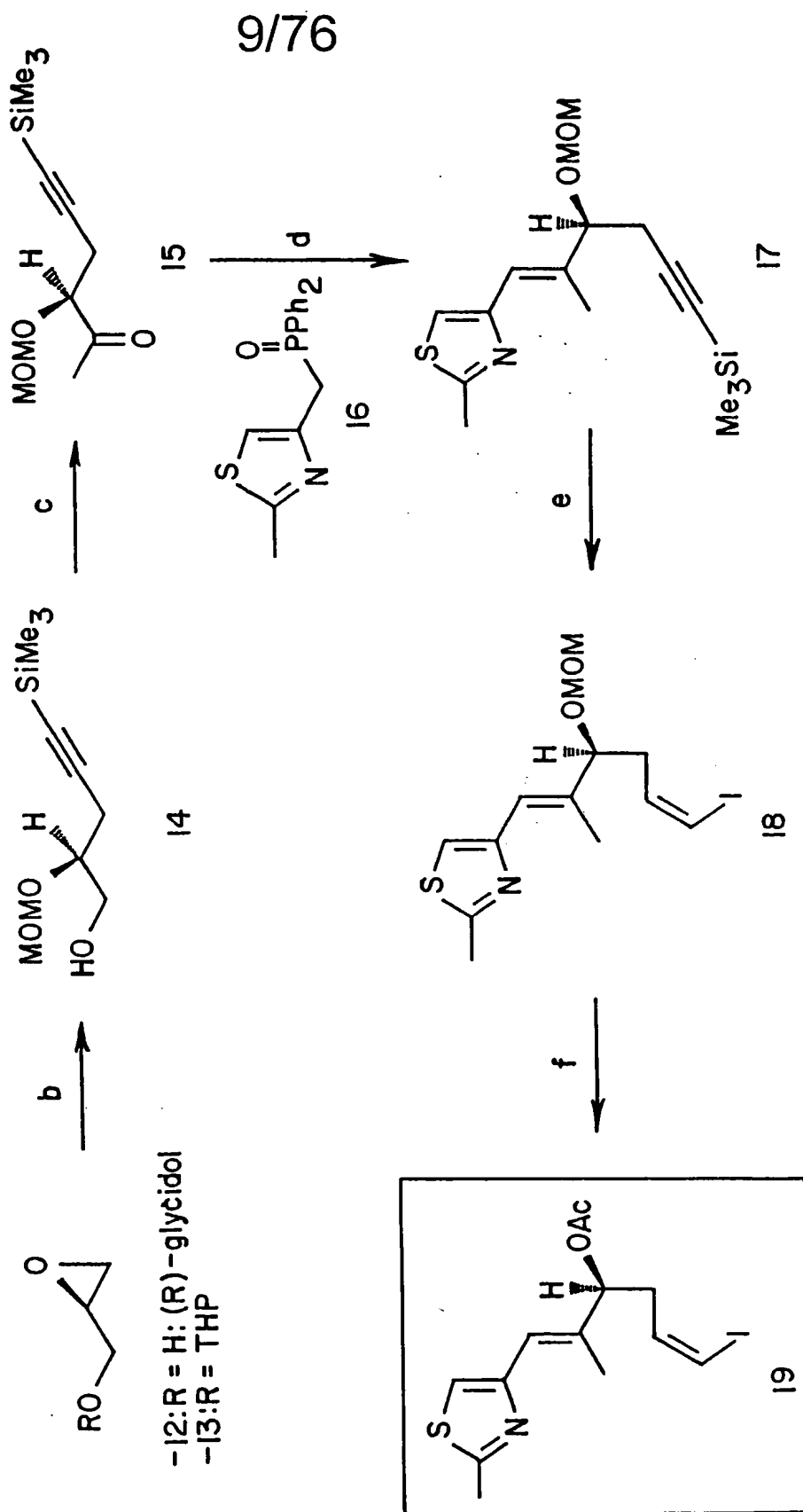
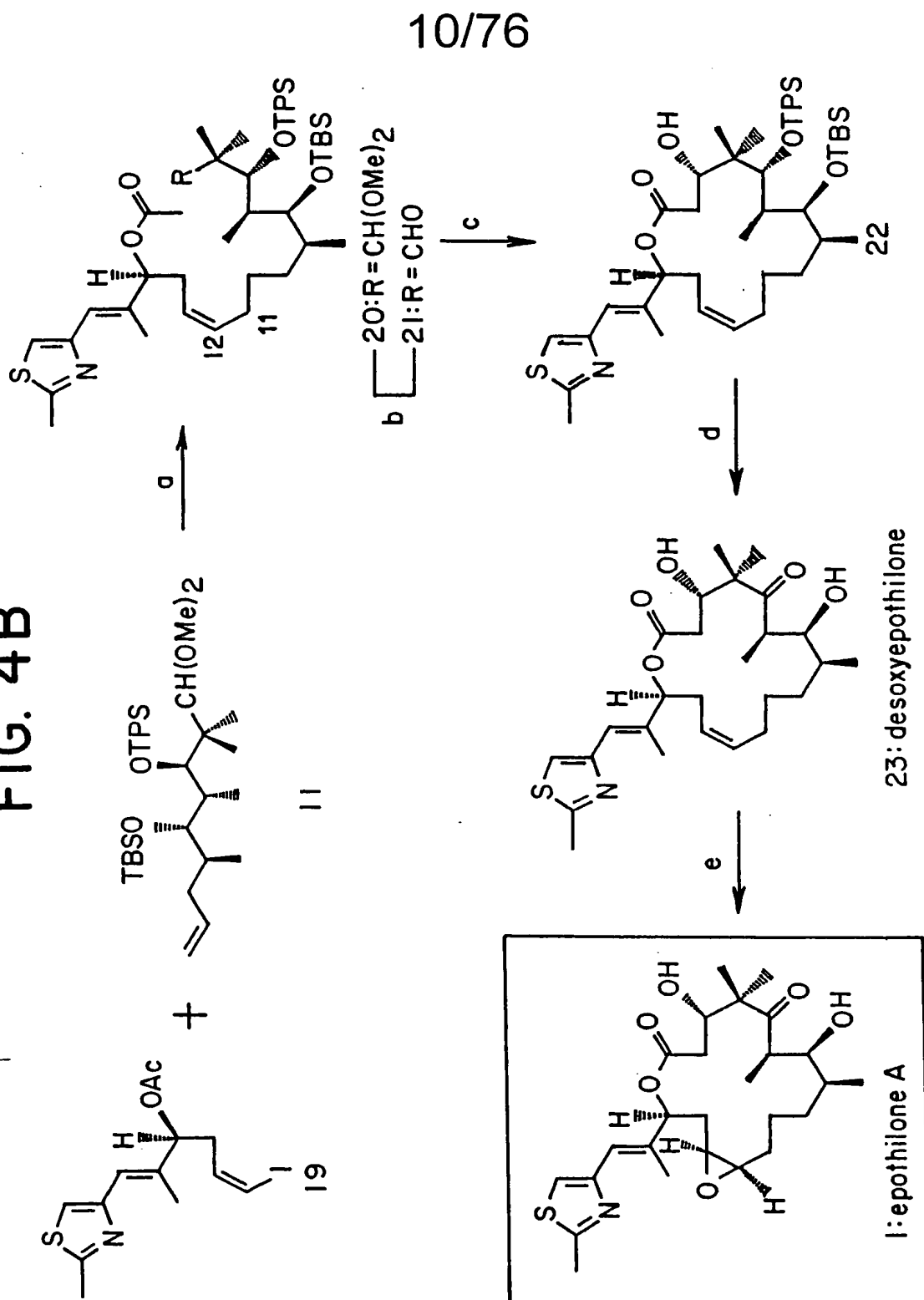


FIG. 4B



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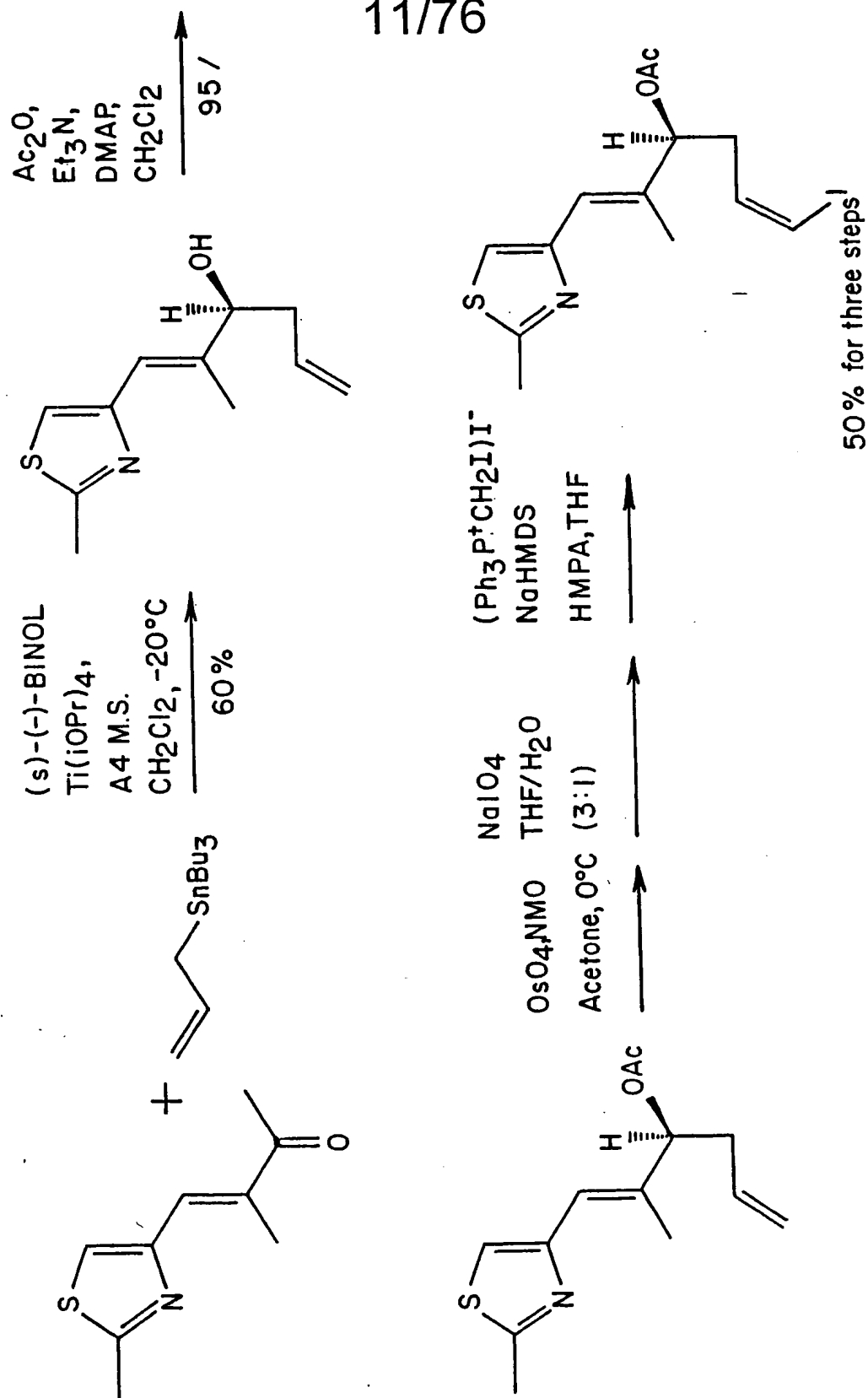


FIG. 6A

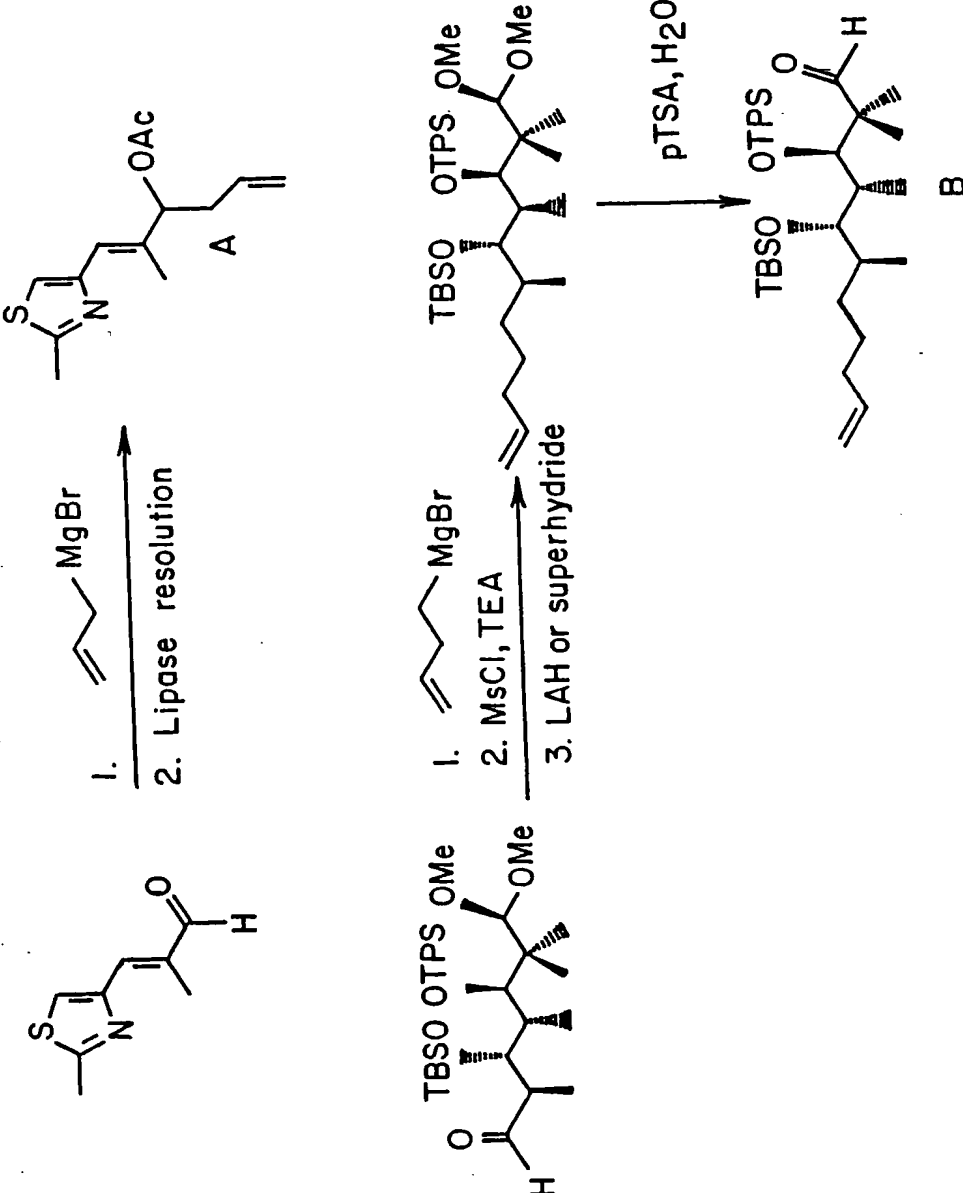
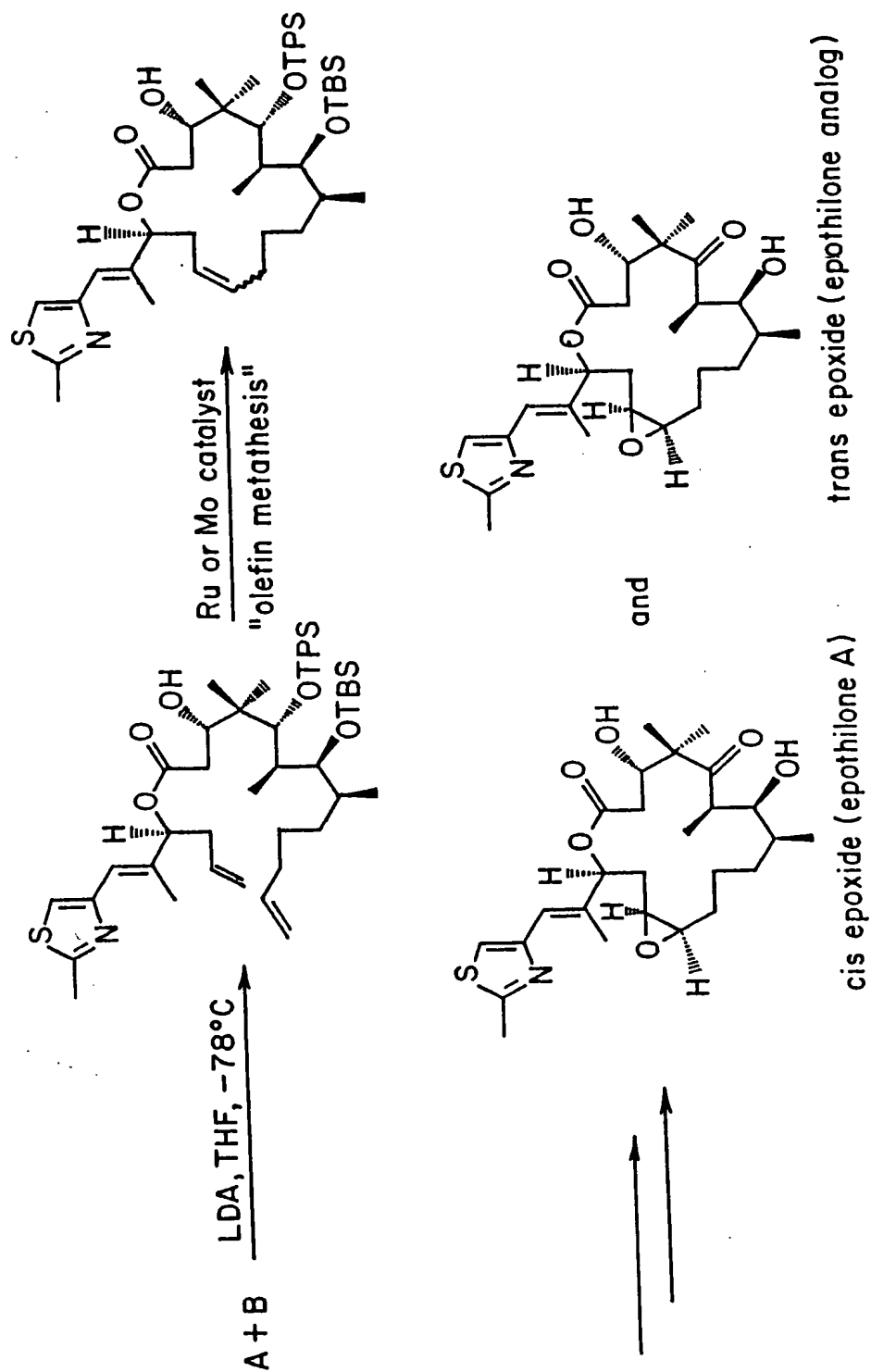
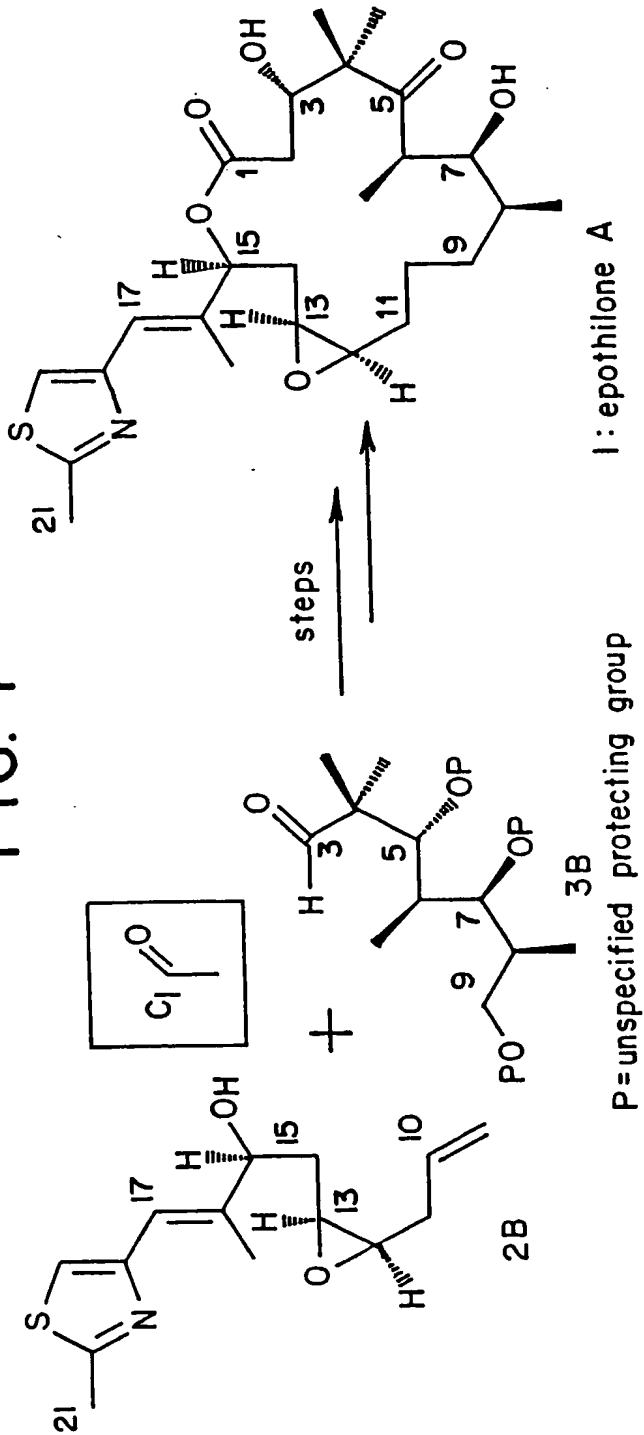


FIG. 6B

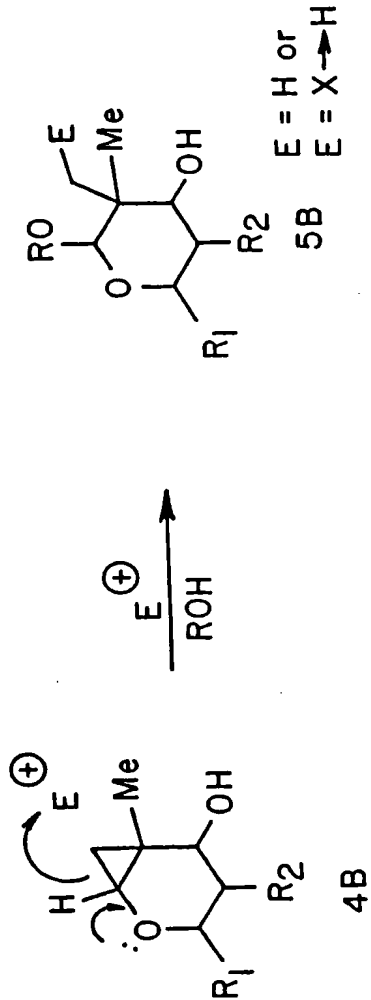


*17 steps from known starting materials vs. 27 steps for aldol macrocyclization

FIG. 7



Convergent strategy for a total synthesis of epothilone A (1).



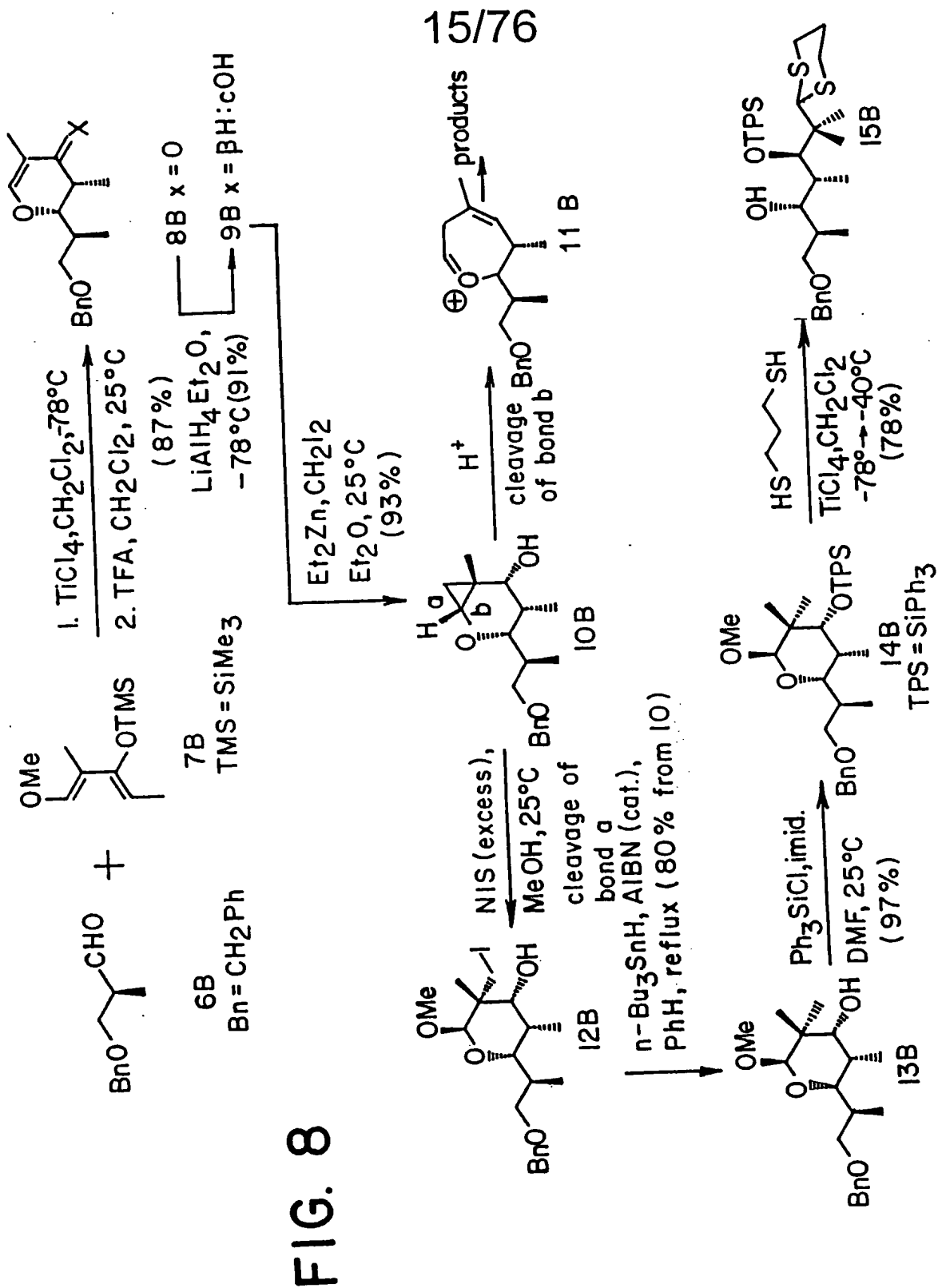
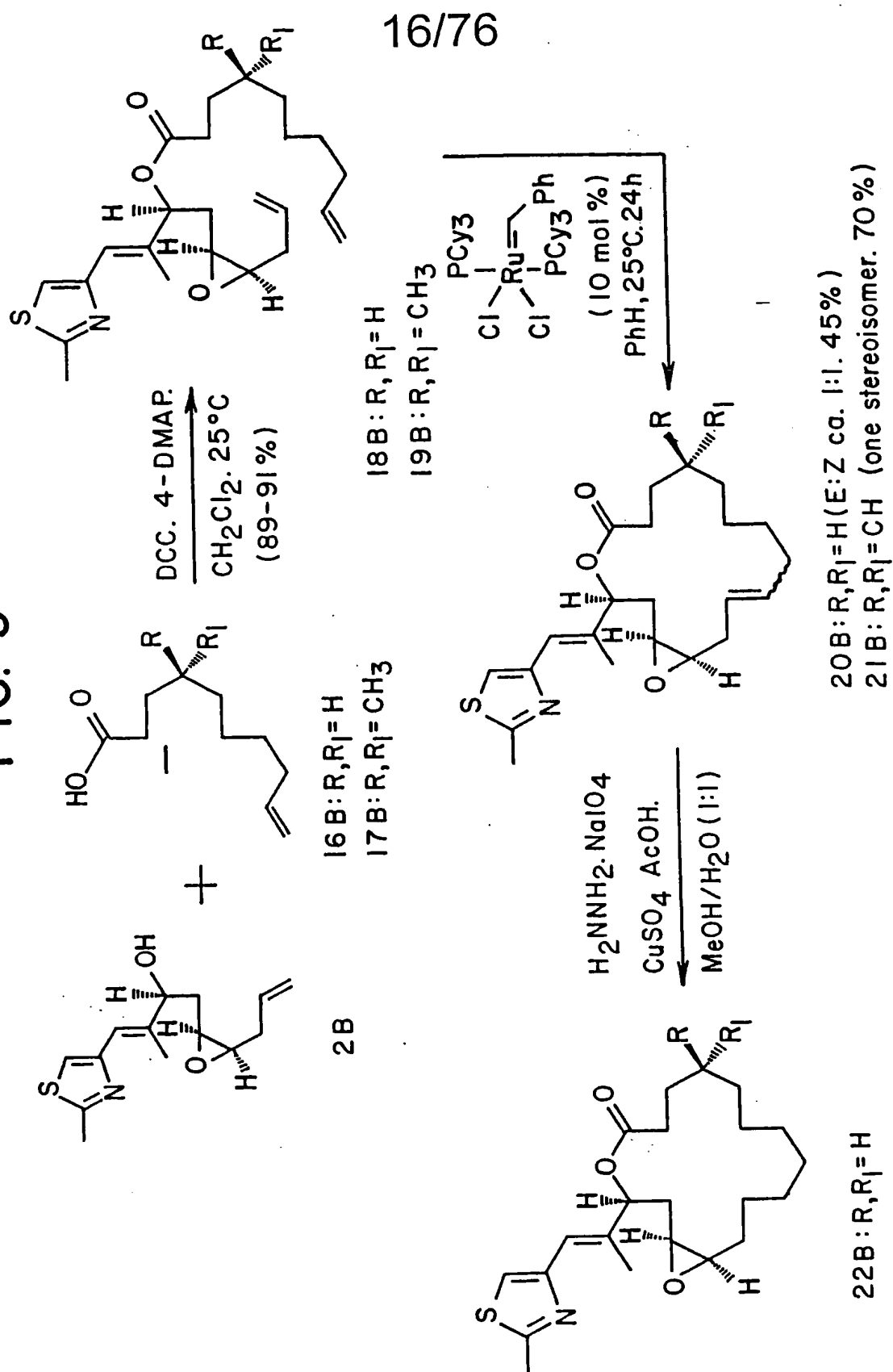


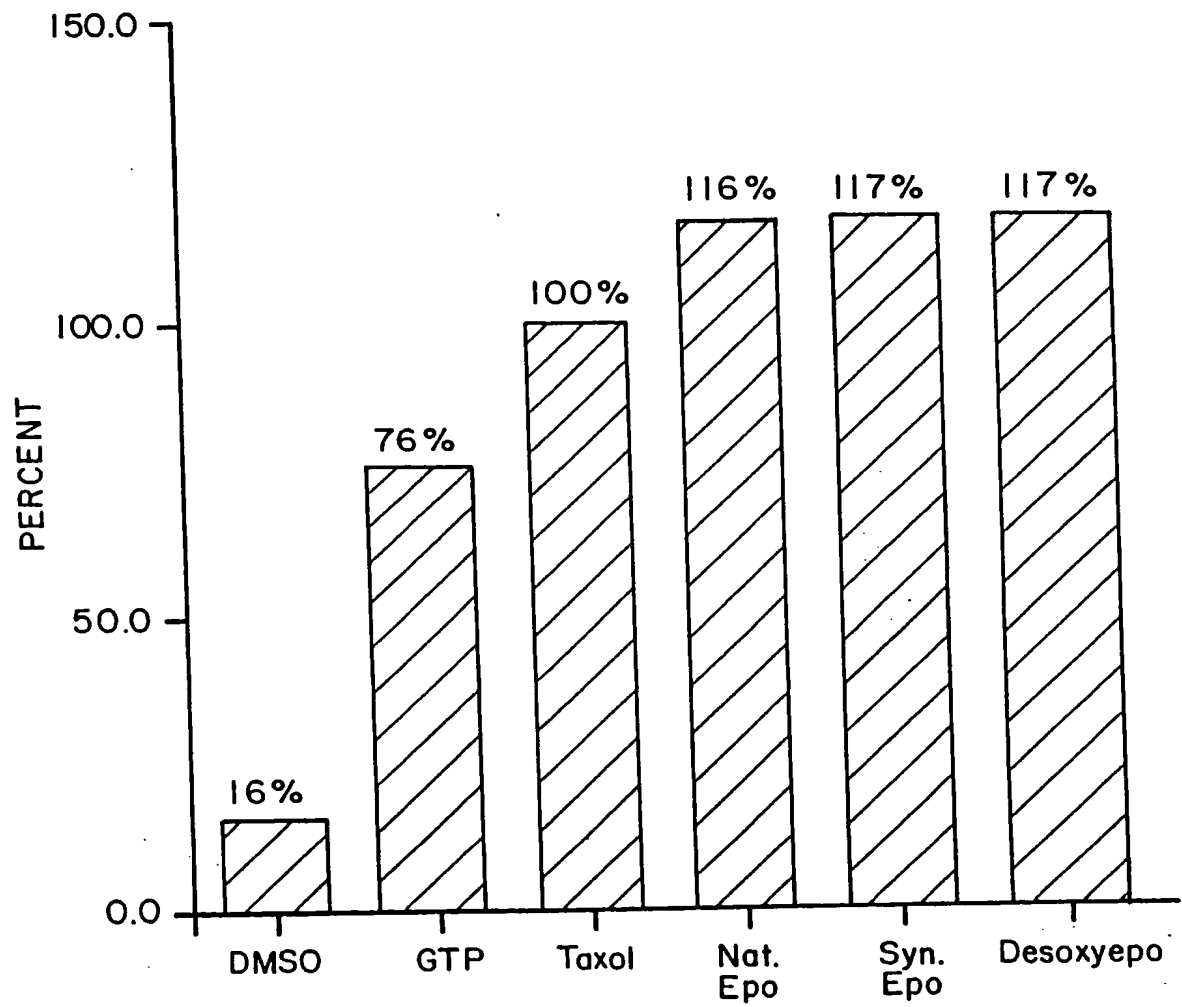
FIG. 8

FIG. 9



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FIG. 10



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FIG. II

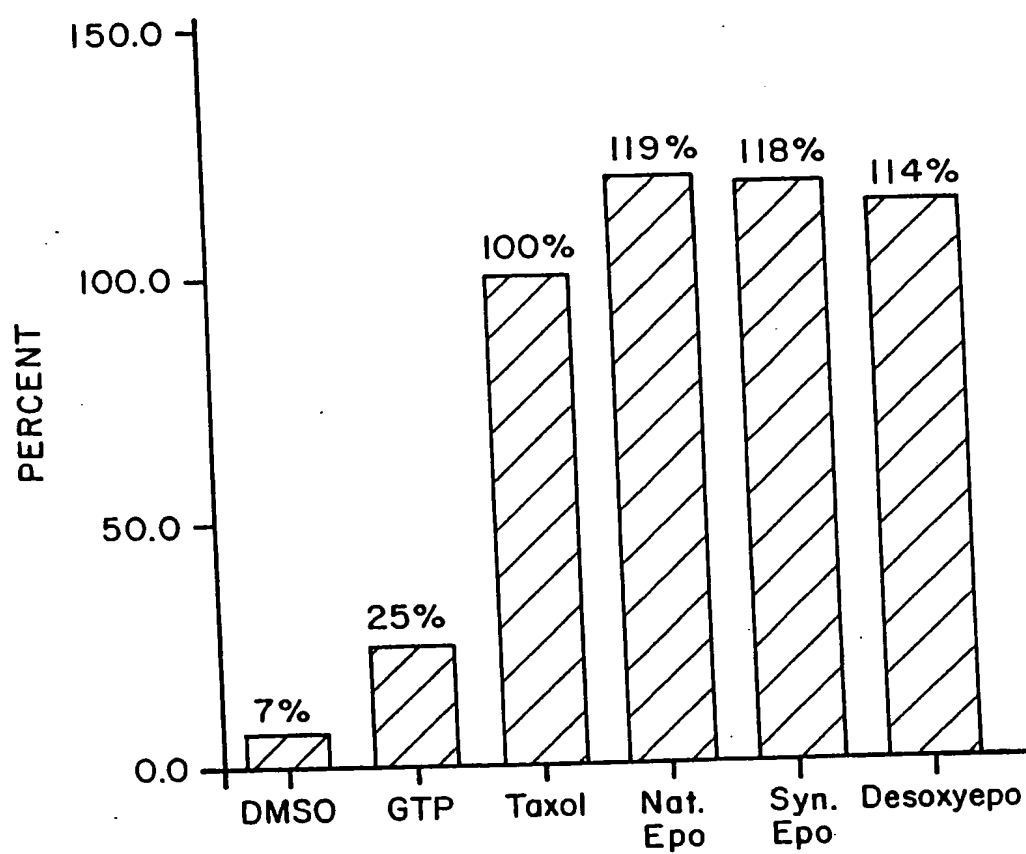


FIG. 13

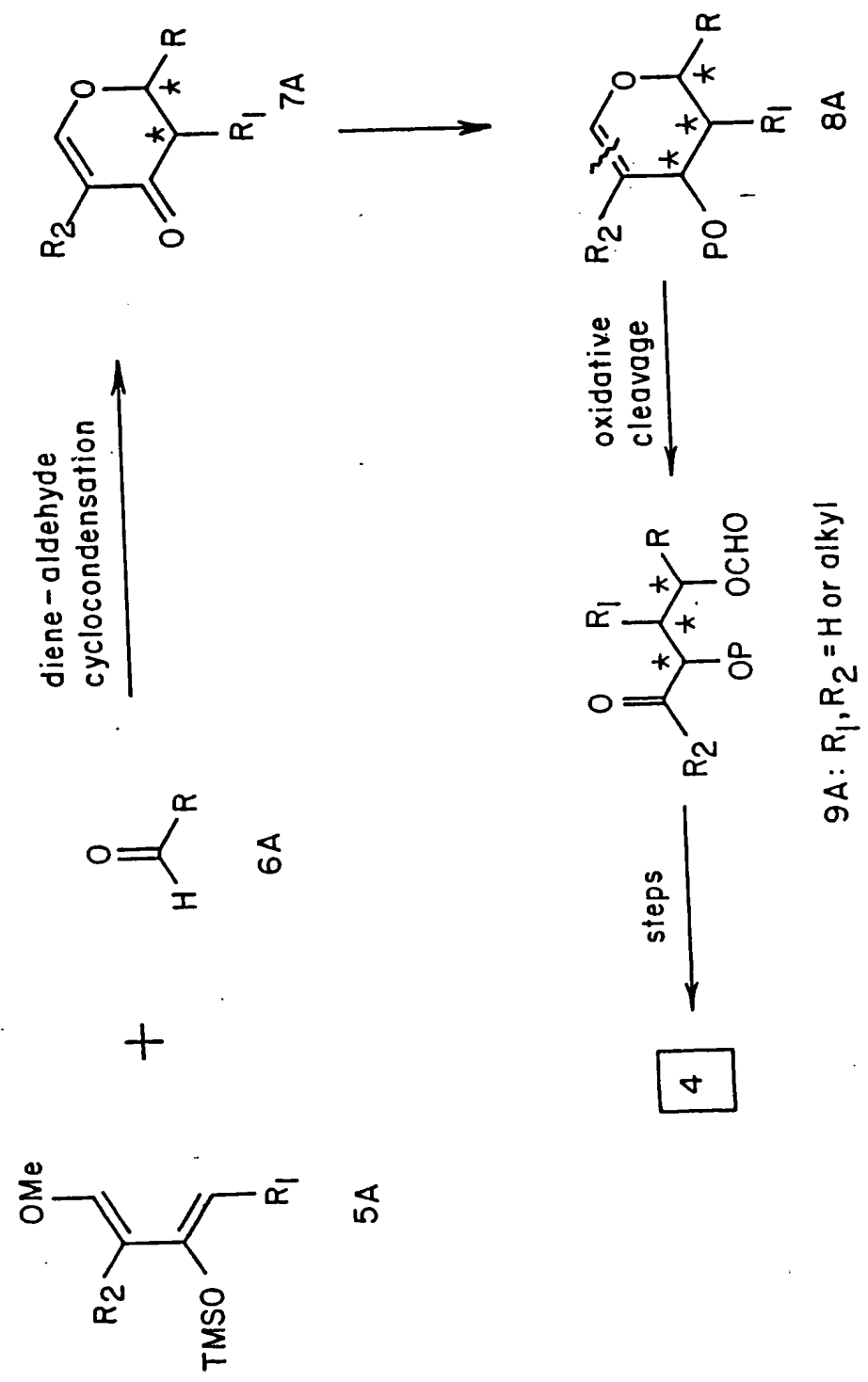


FIG. 14A

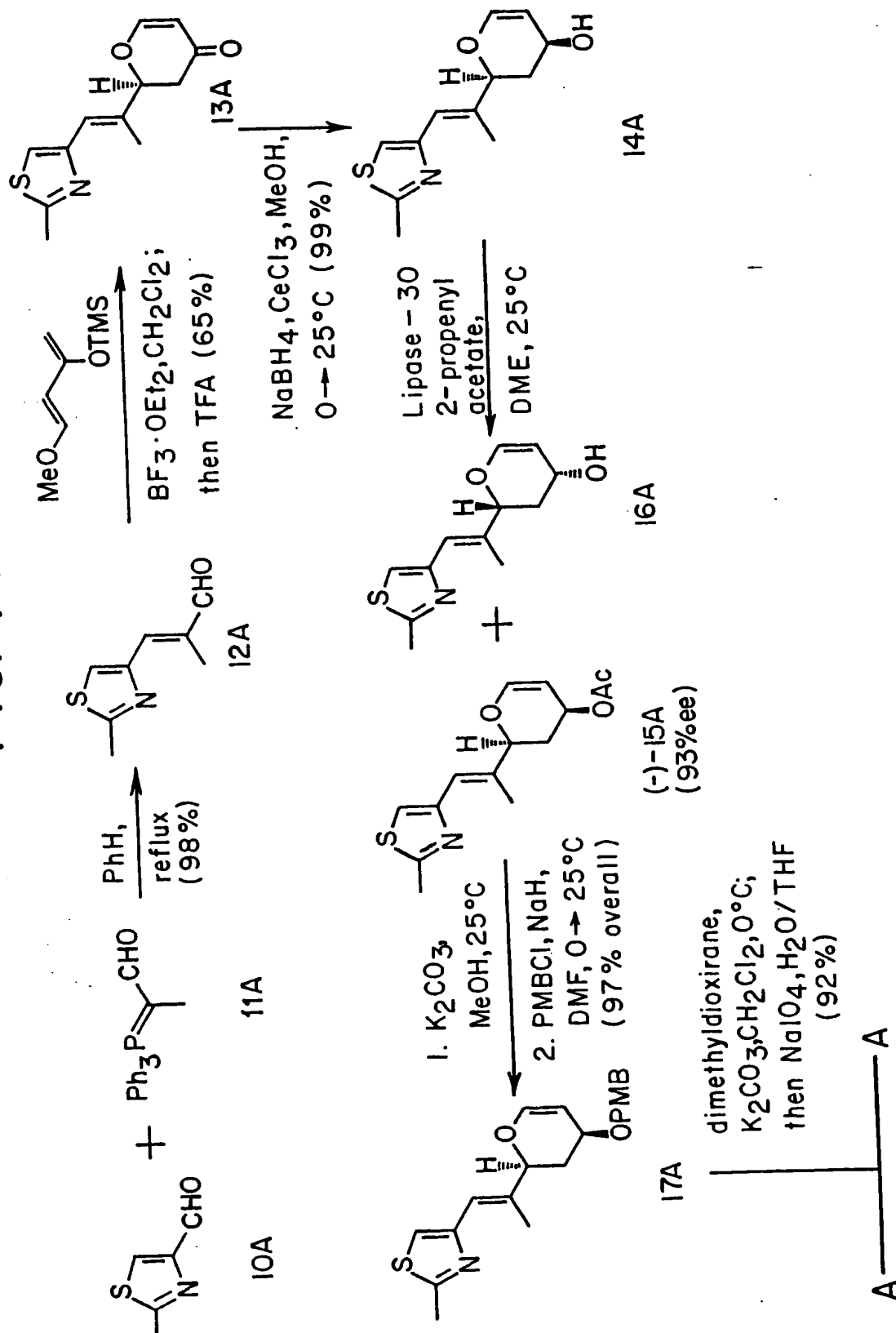


FIG. 14B

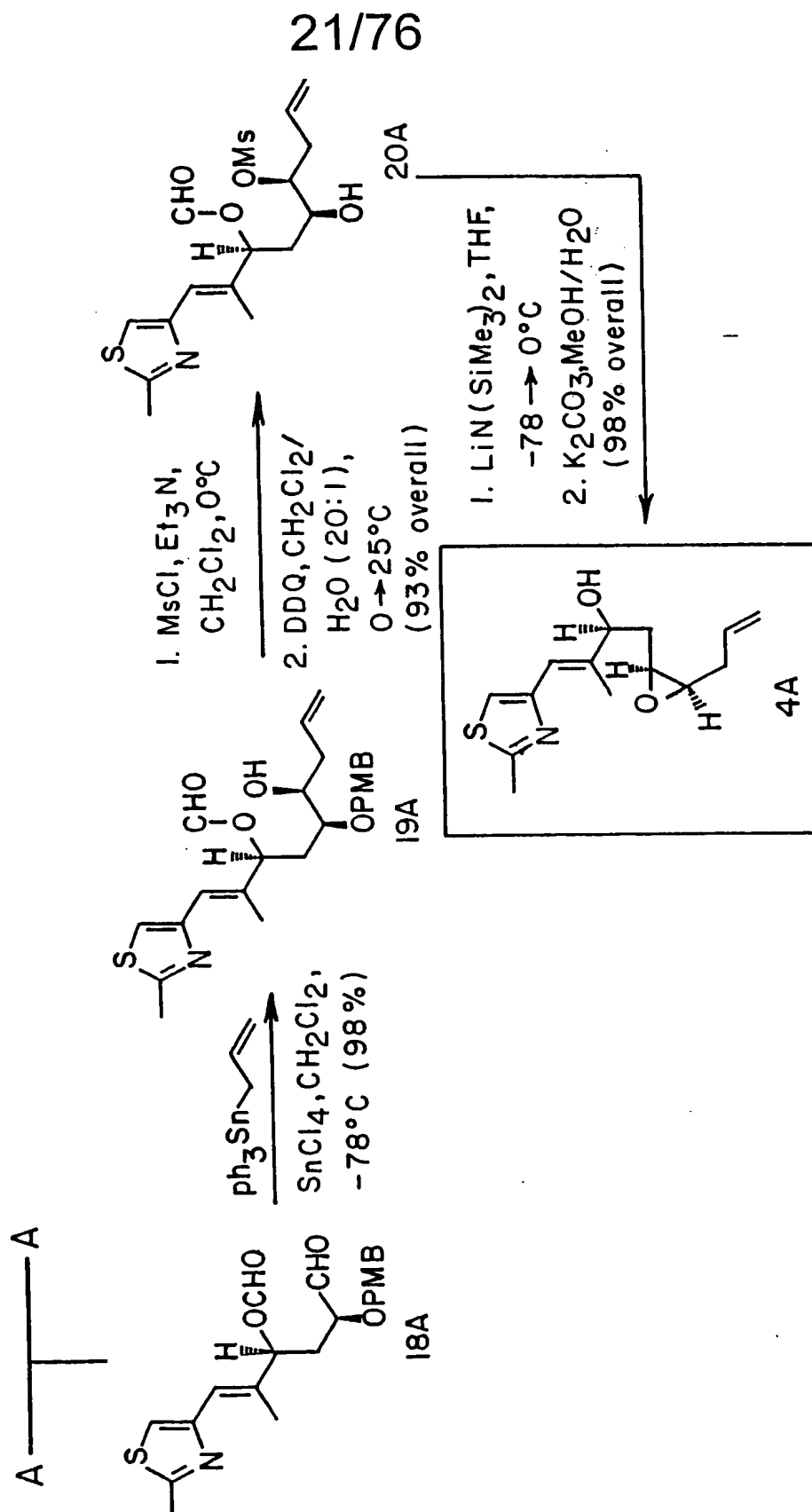


FIG. 15

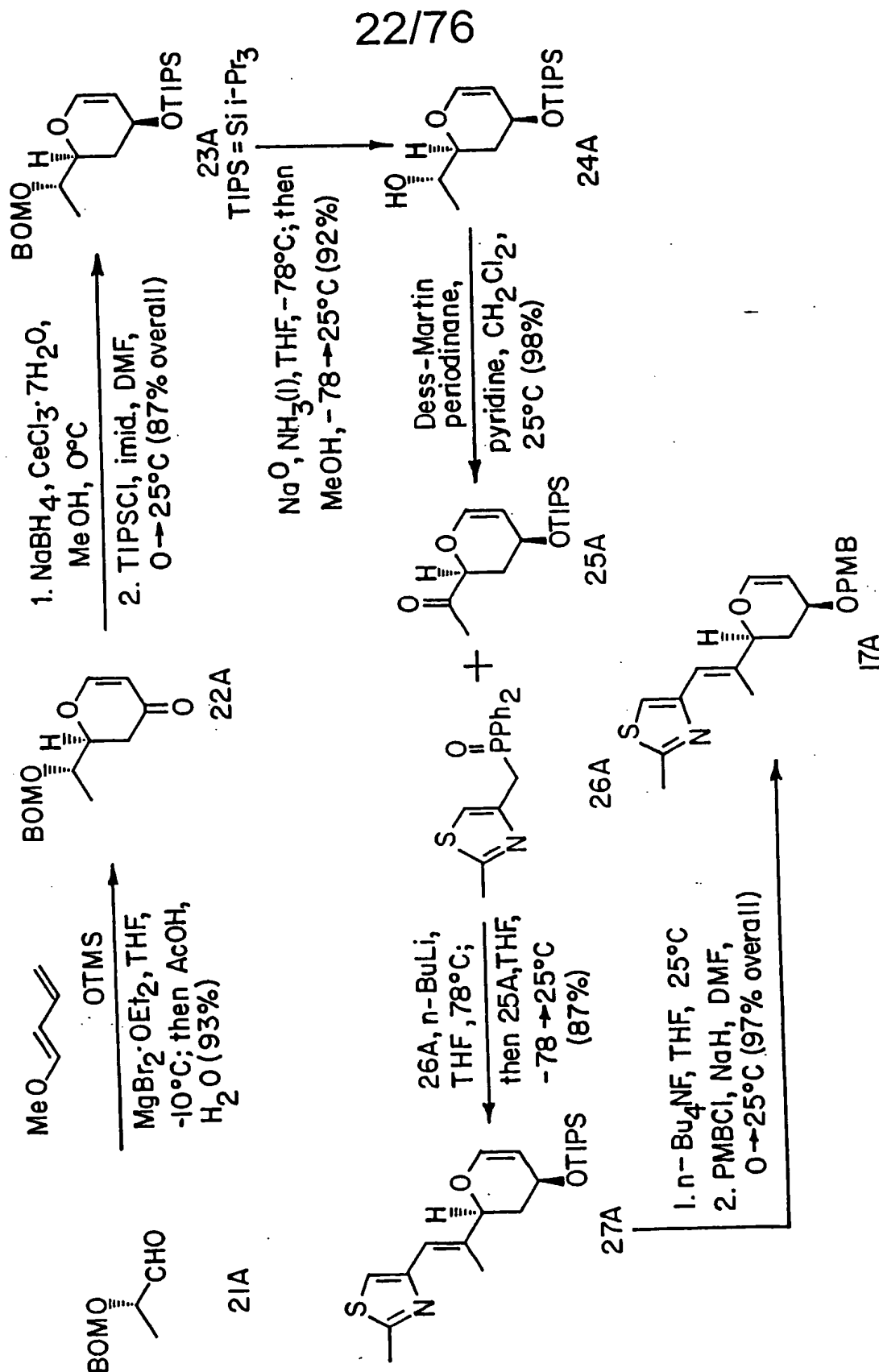


FIG. 16

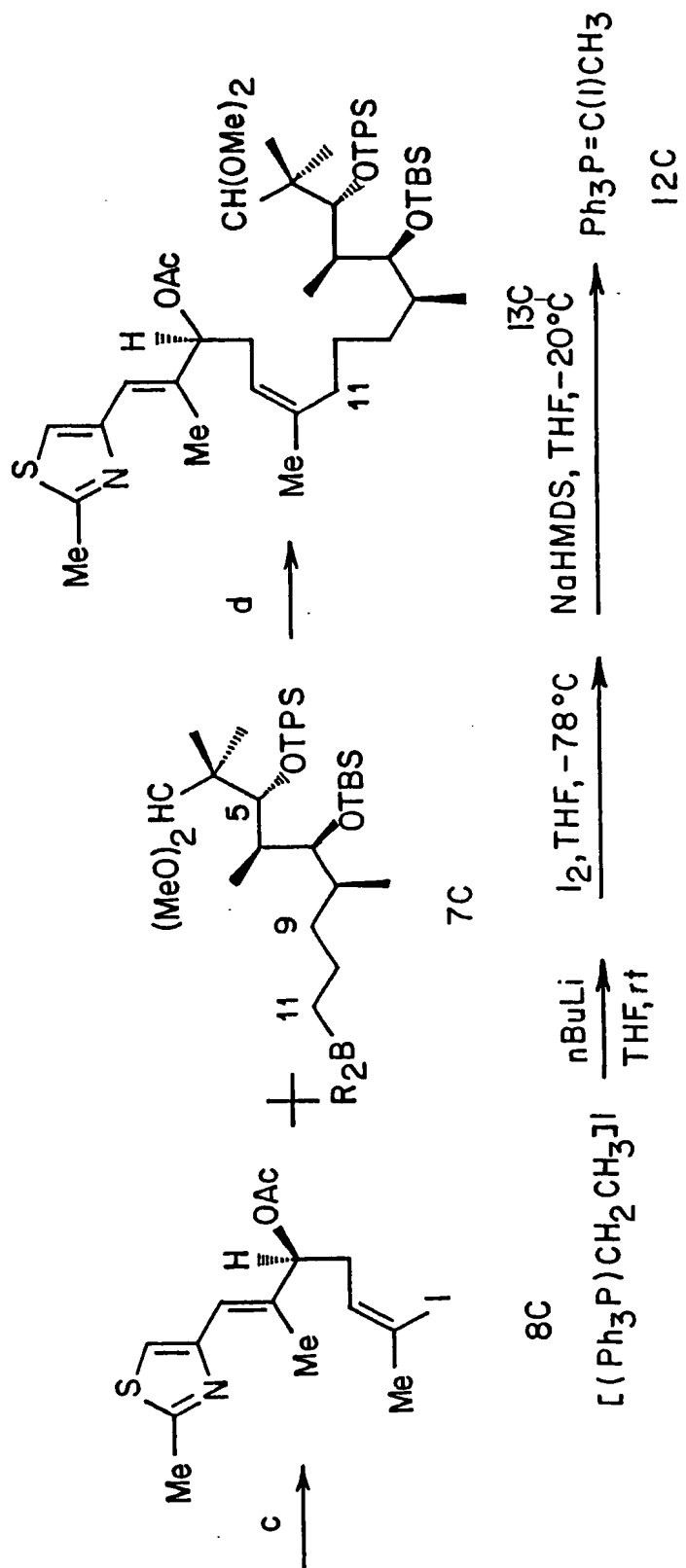
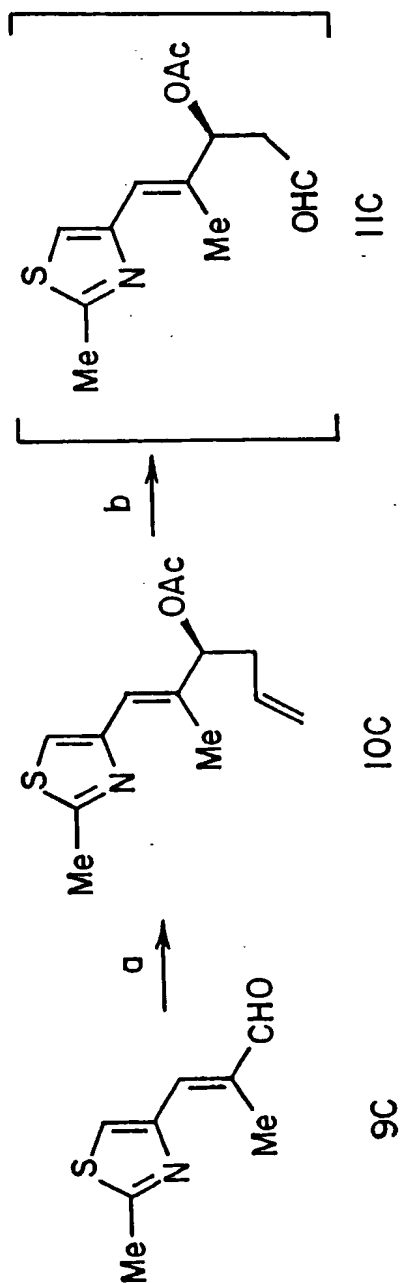
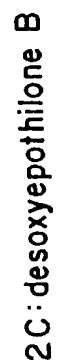


FIG. 17



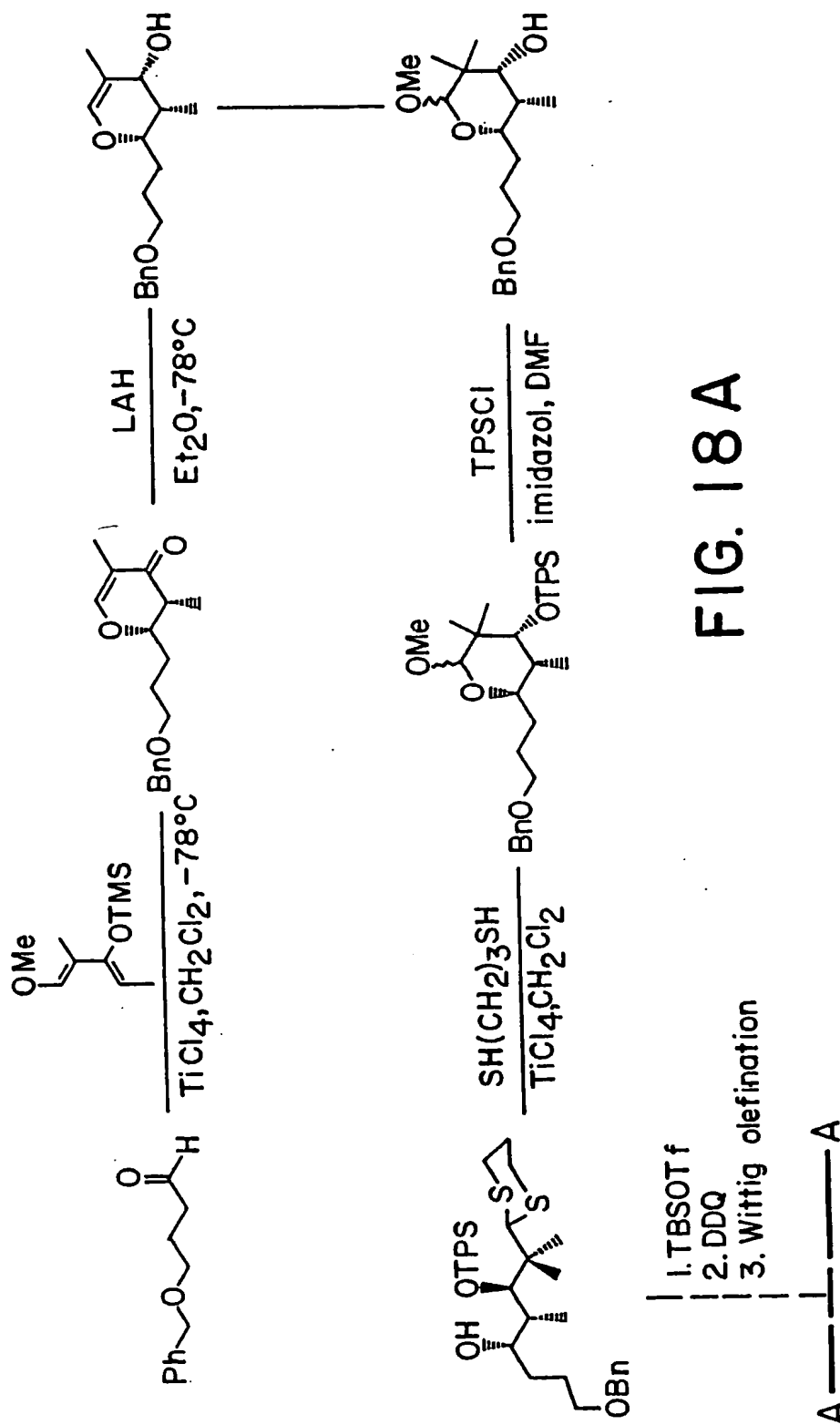


FIG. 18B

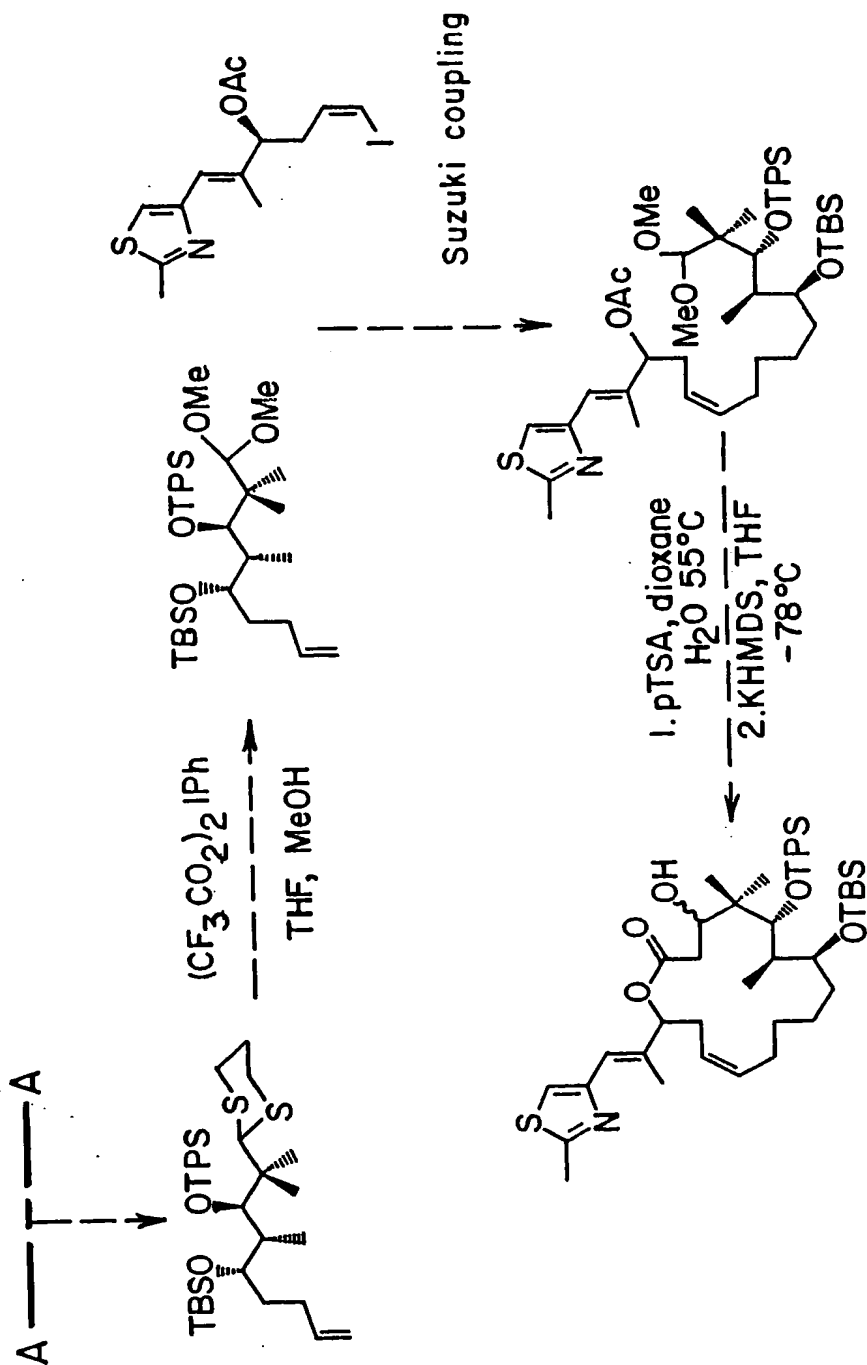


FIG. 19A

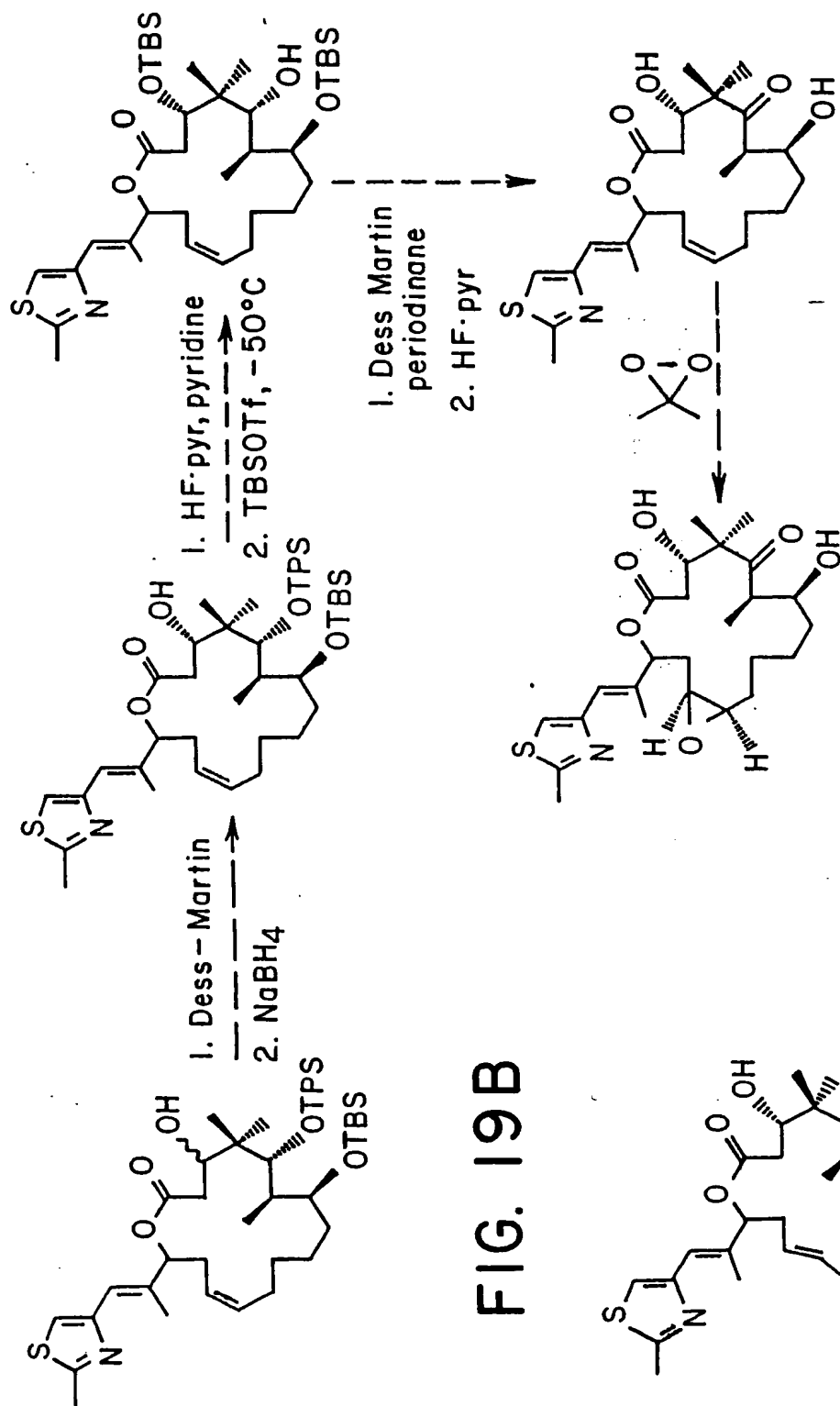
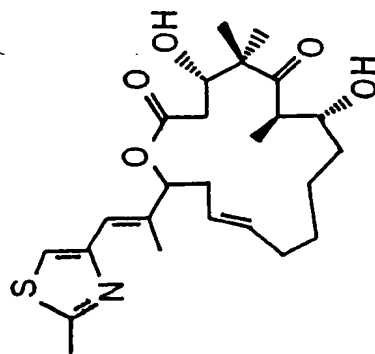


FIG. 19B



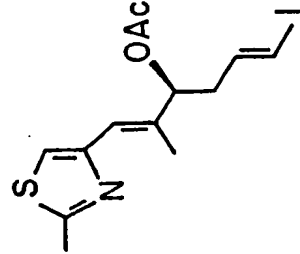


FIG. 19C

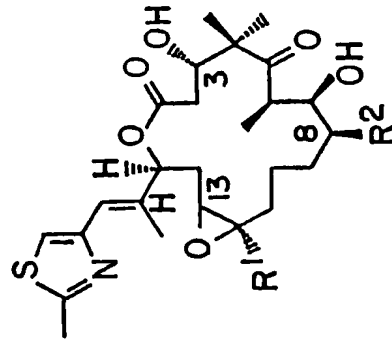


FIG. 20A

R¹ = H, R² = Me; epothilone A

R¹ = R² = Me; epothilone B

R¹ = R² = H; Cg-desmethyl-epothilone A (3D)

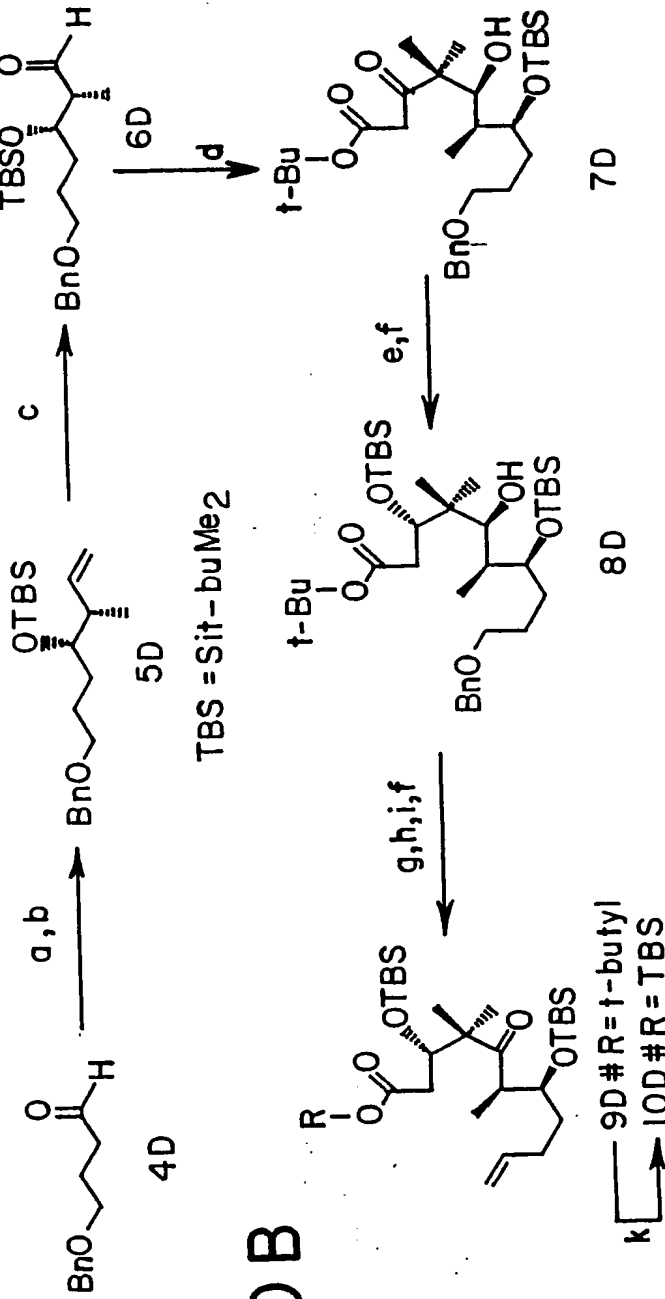


FIG. 20B

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FIG. 21

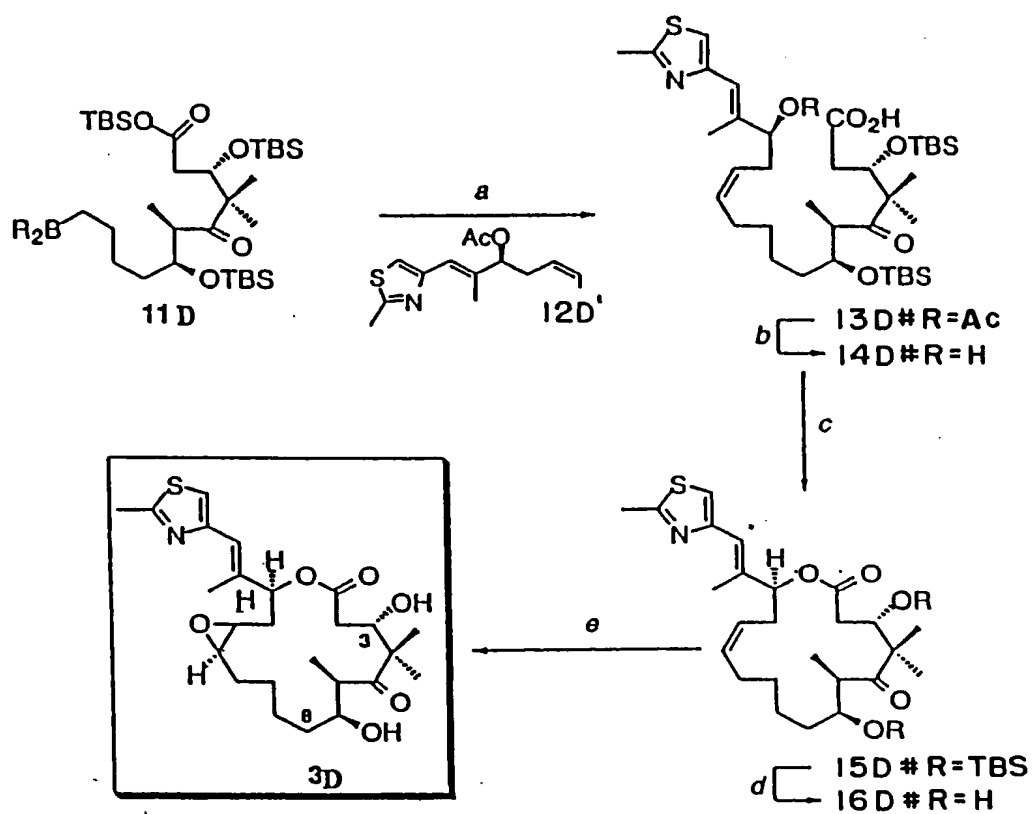


FIG. 22 A

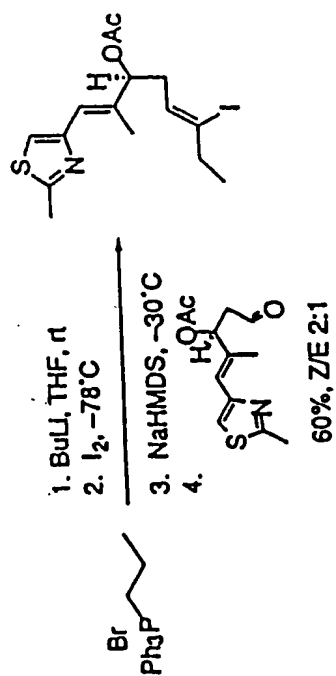


FIG. 22 B

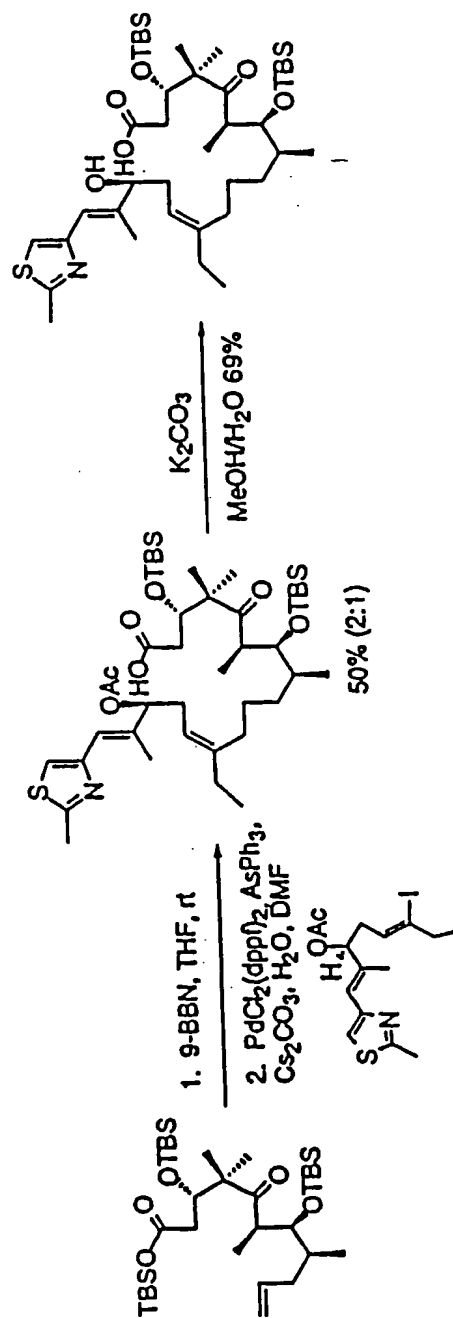


FIG. 22C

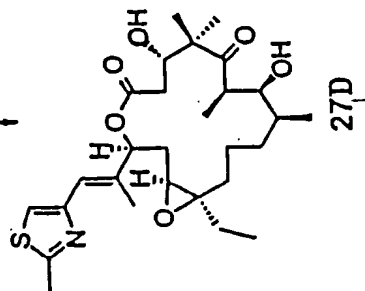
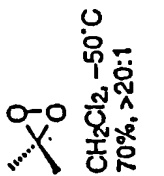
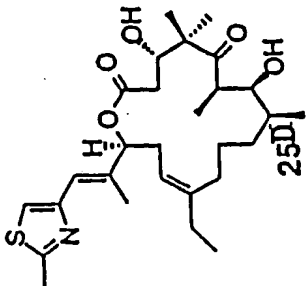


FIG. 23A

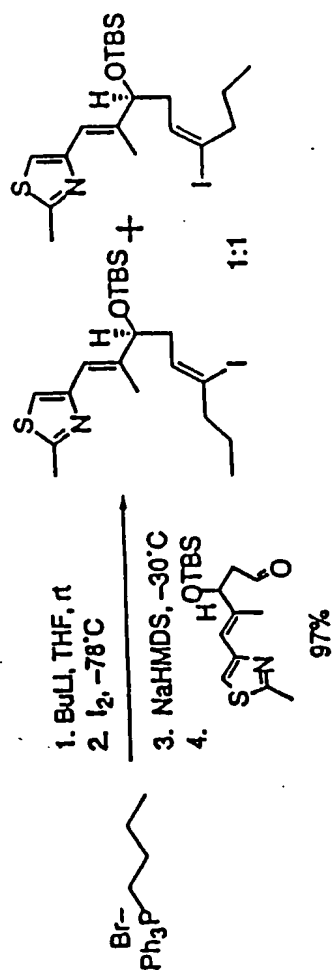


FIG. 23B

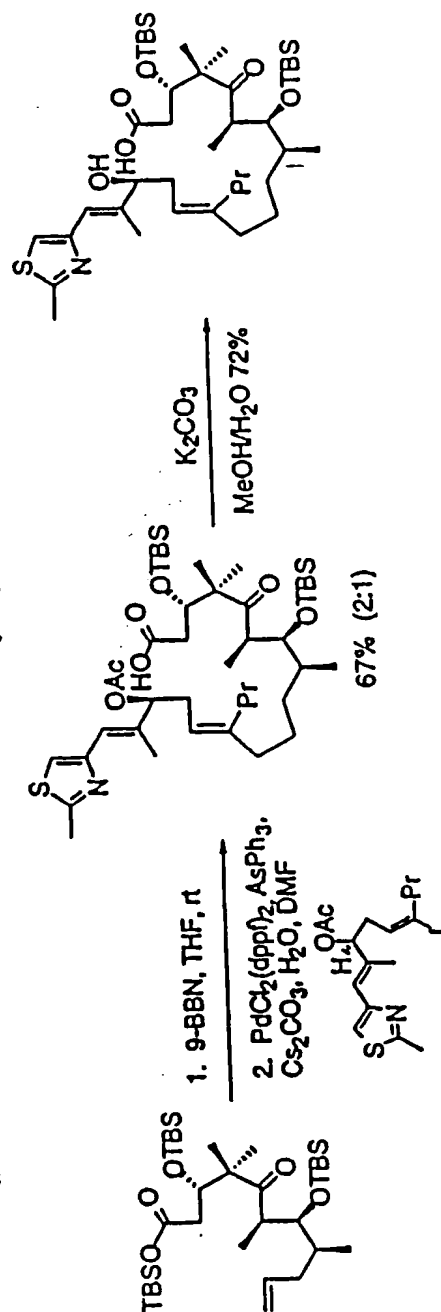


FIG. 23C

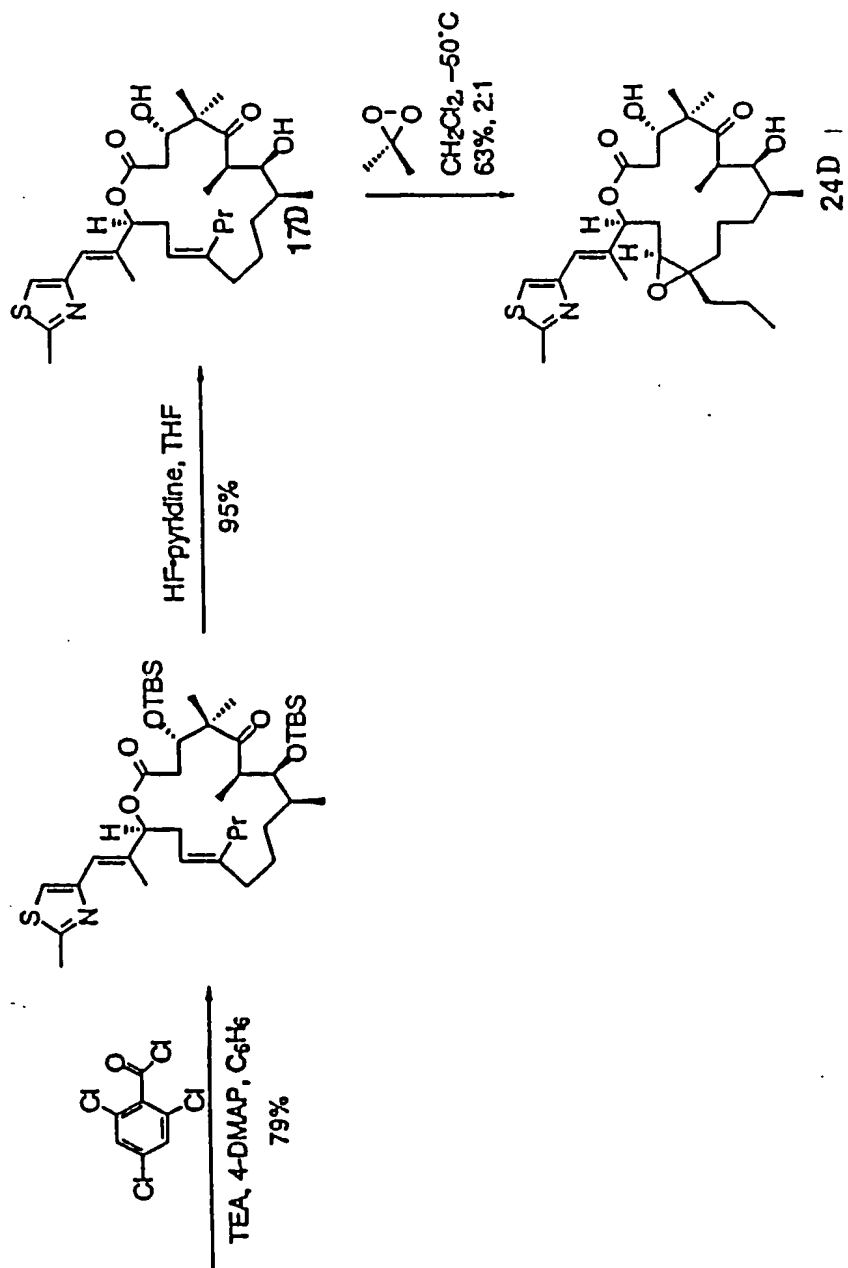


FIG. 24A

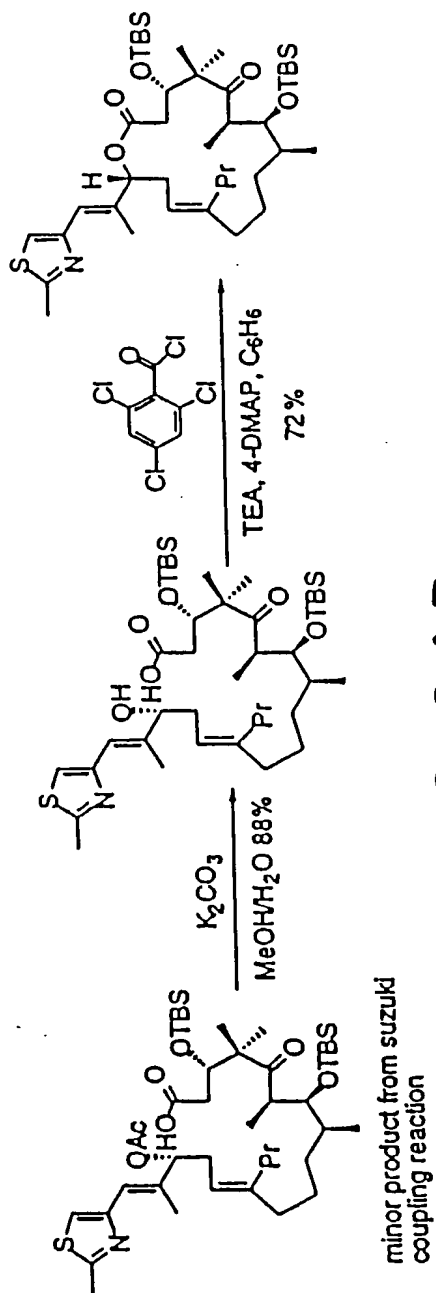


FIG. 24B

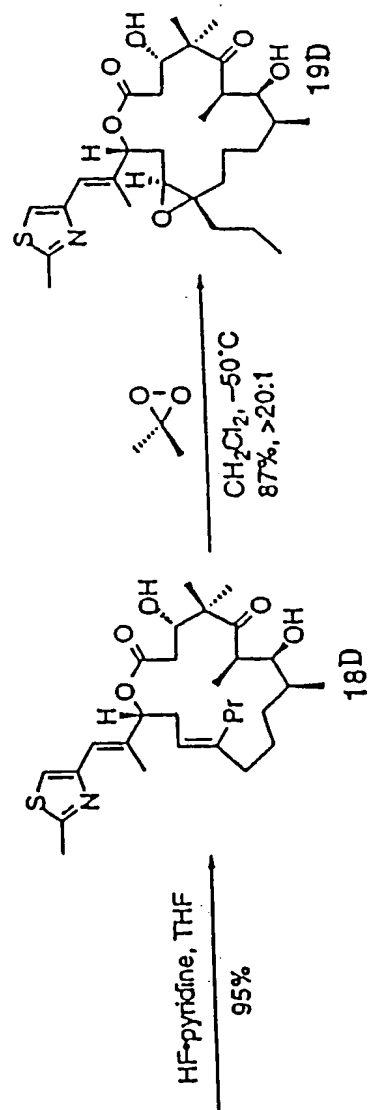


FIG. 25A

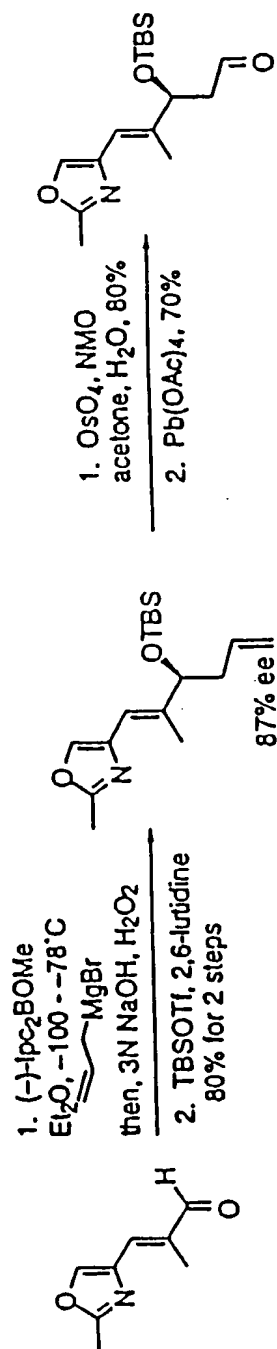


FIG. 25B

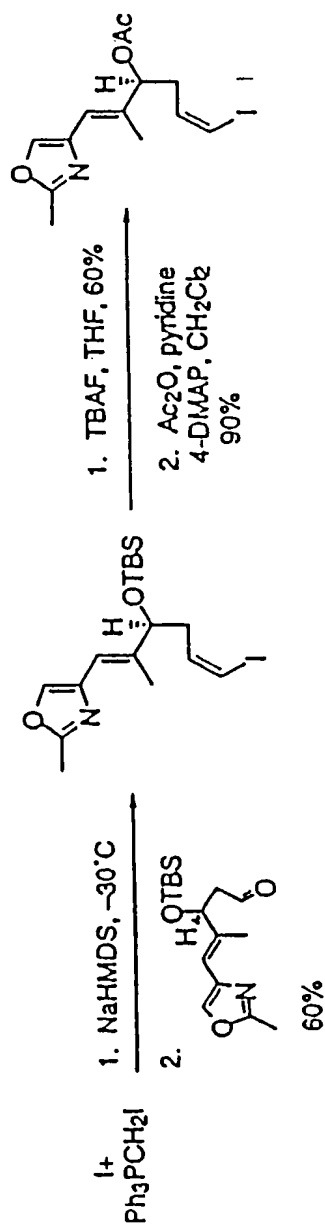


FIG. 25C

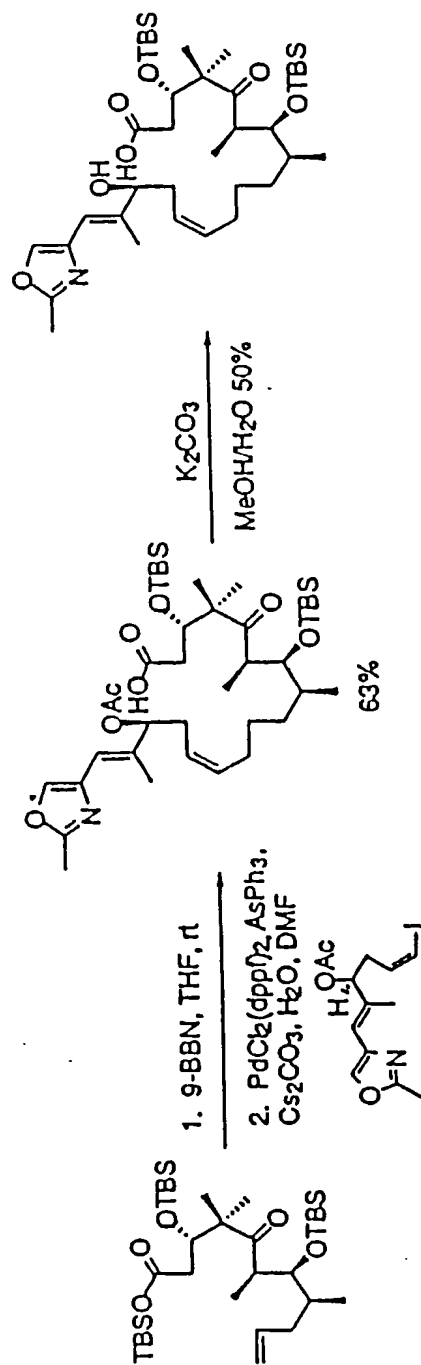


FIG. 25D

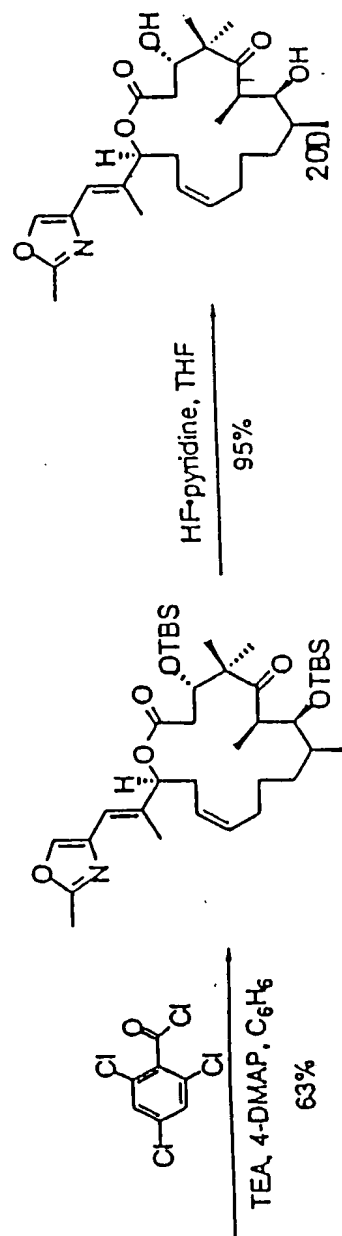


FIG. 26A

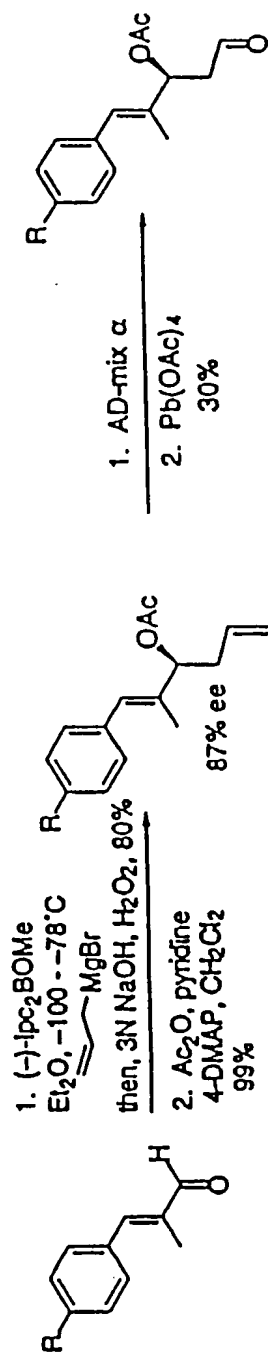
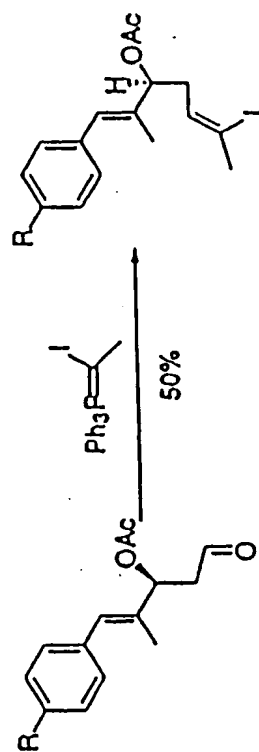


FIG. 26B



R = H, F, CF_3
 R=H is the only compound
 completed, F and CF_3 are nearly
 completed

FIG. 26C

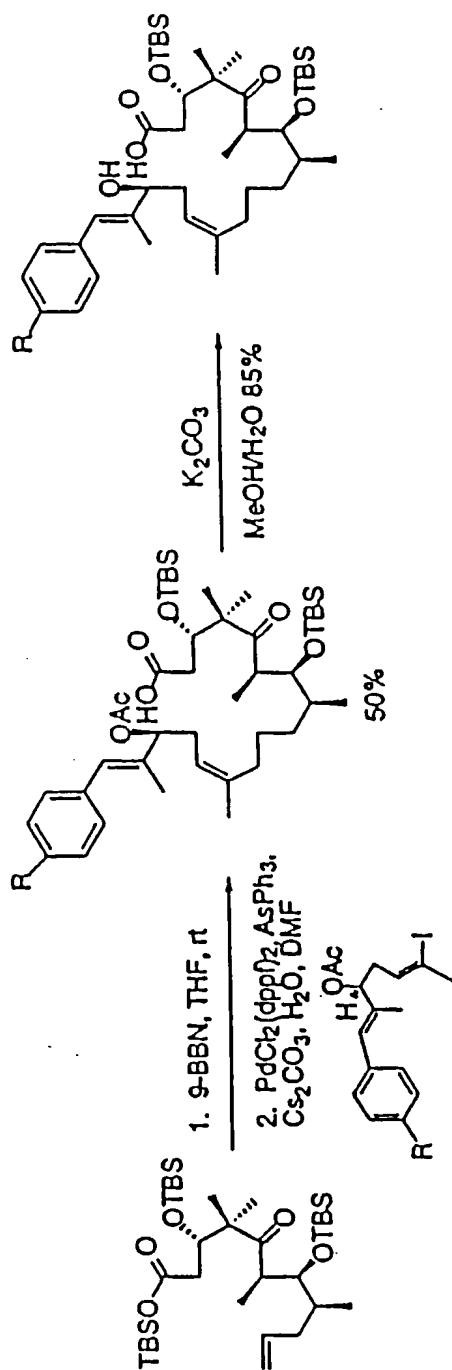


FIG. 26D

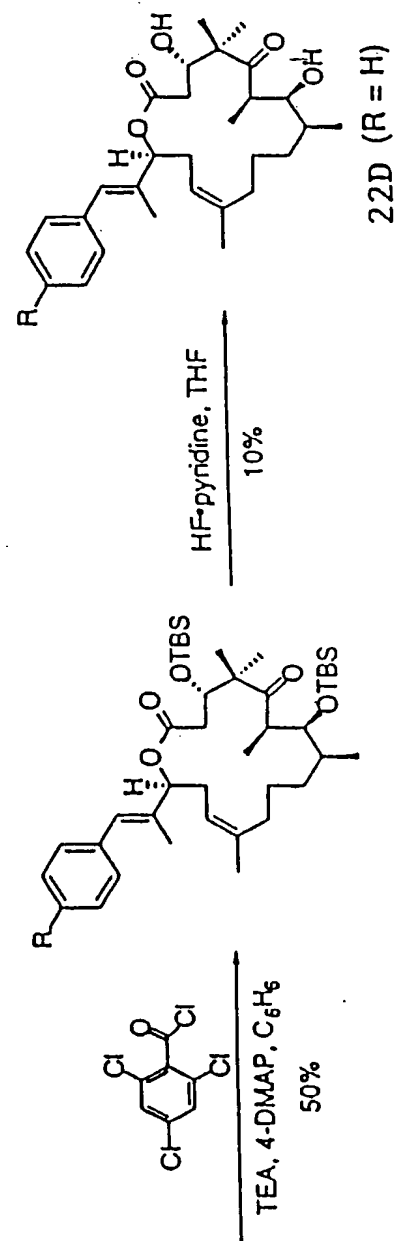


FIG. 27A

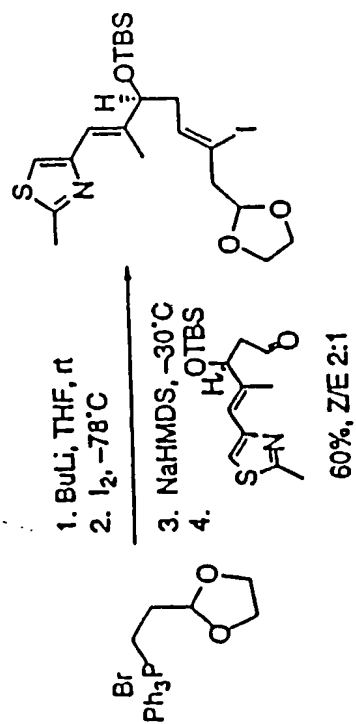


FIG. 27B

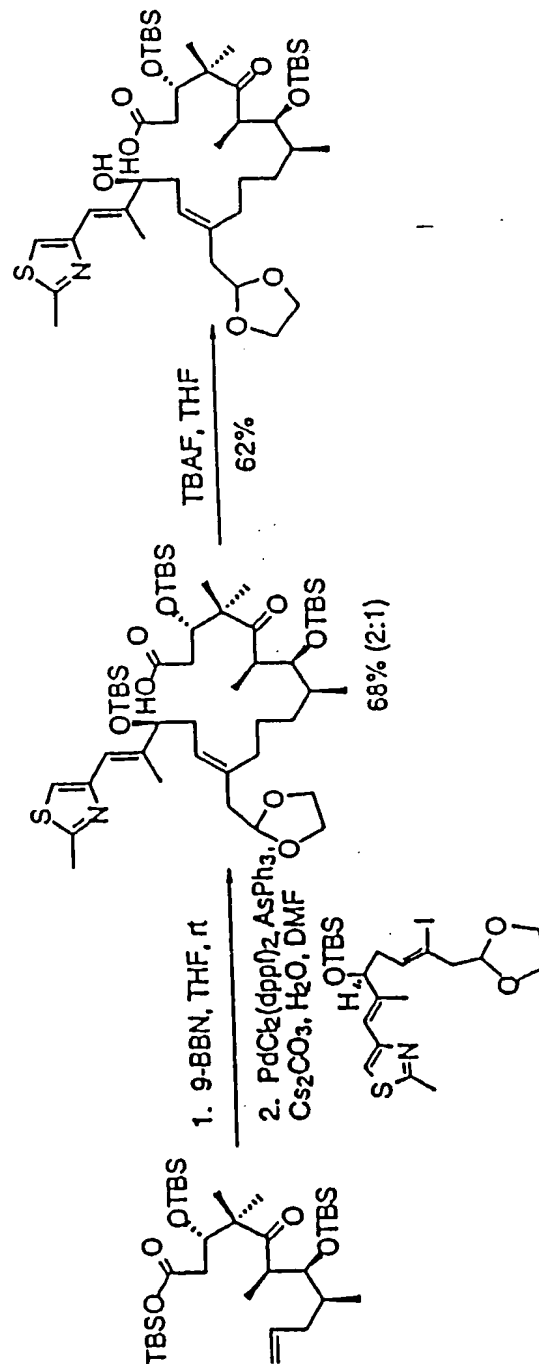
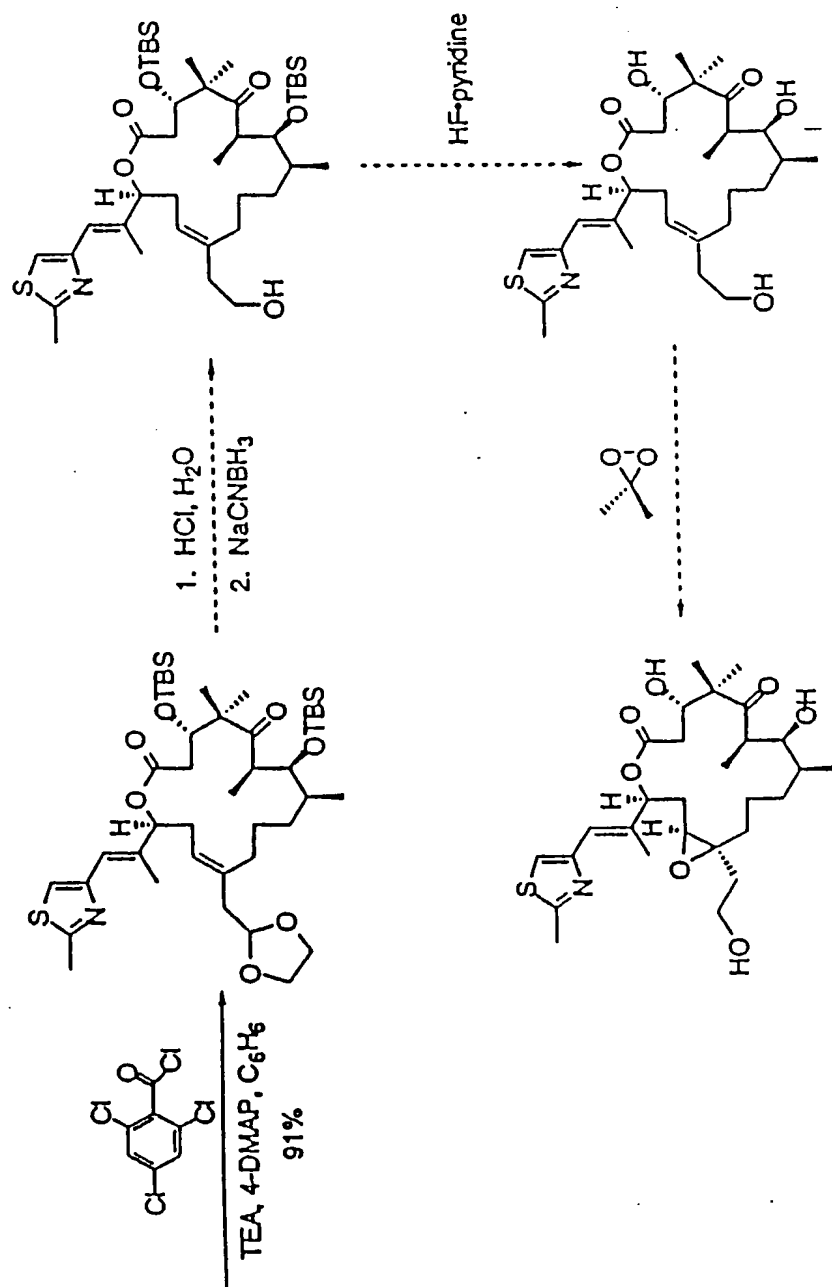
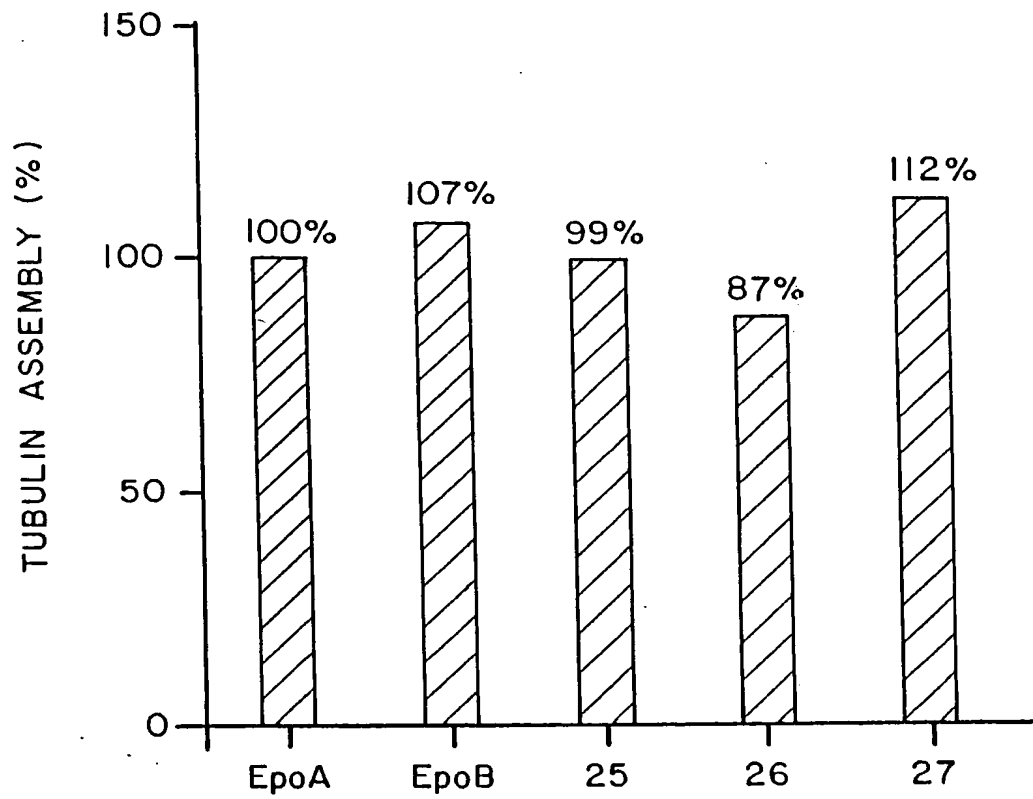


FIG. 27C



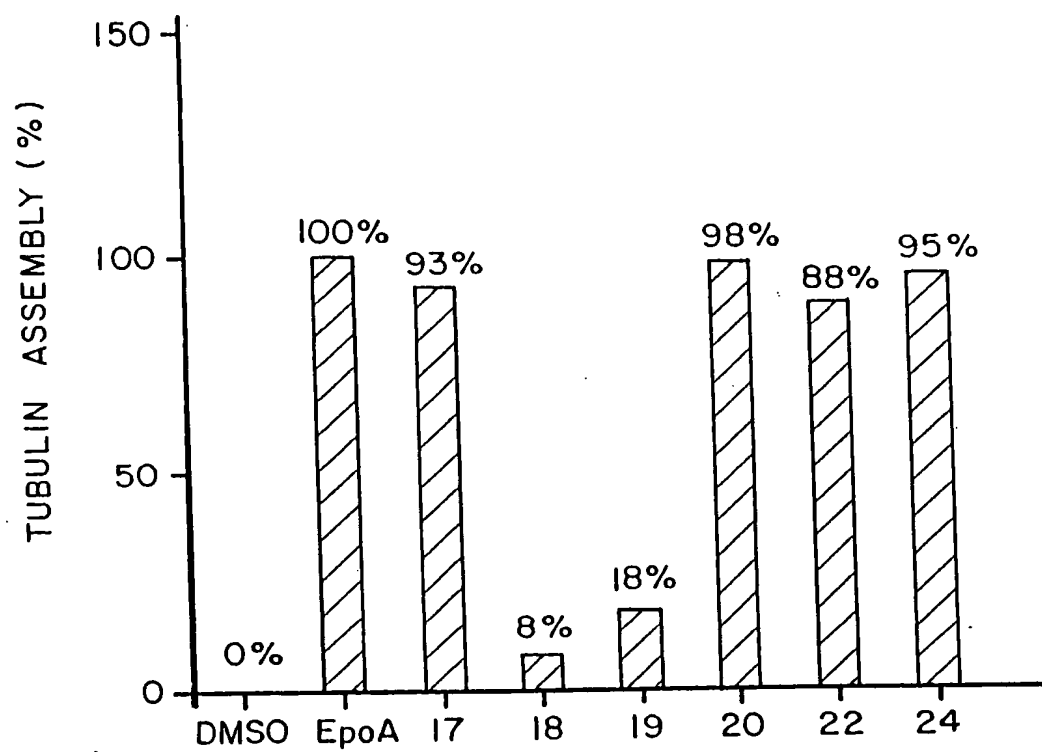
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FIG. 28A



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FIG. 28 B



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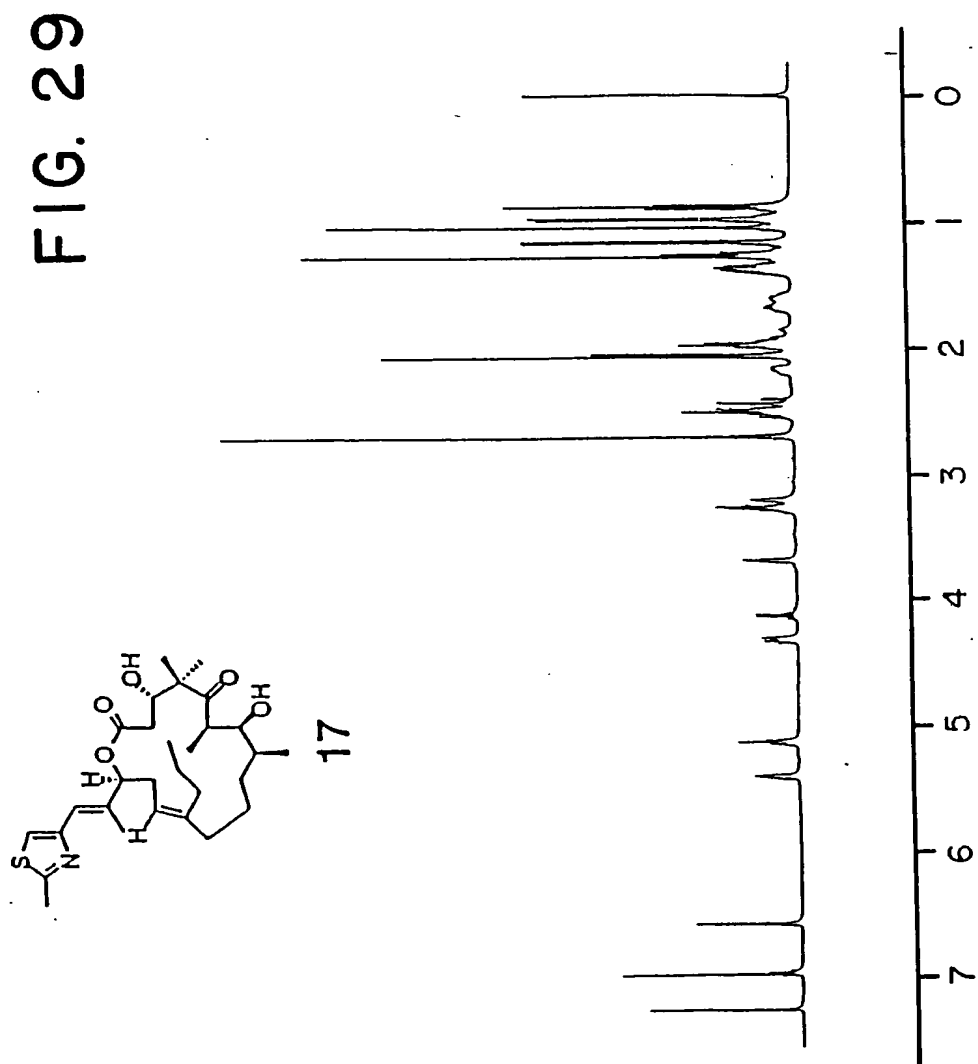


FIG. 30

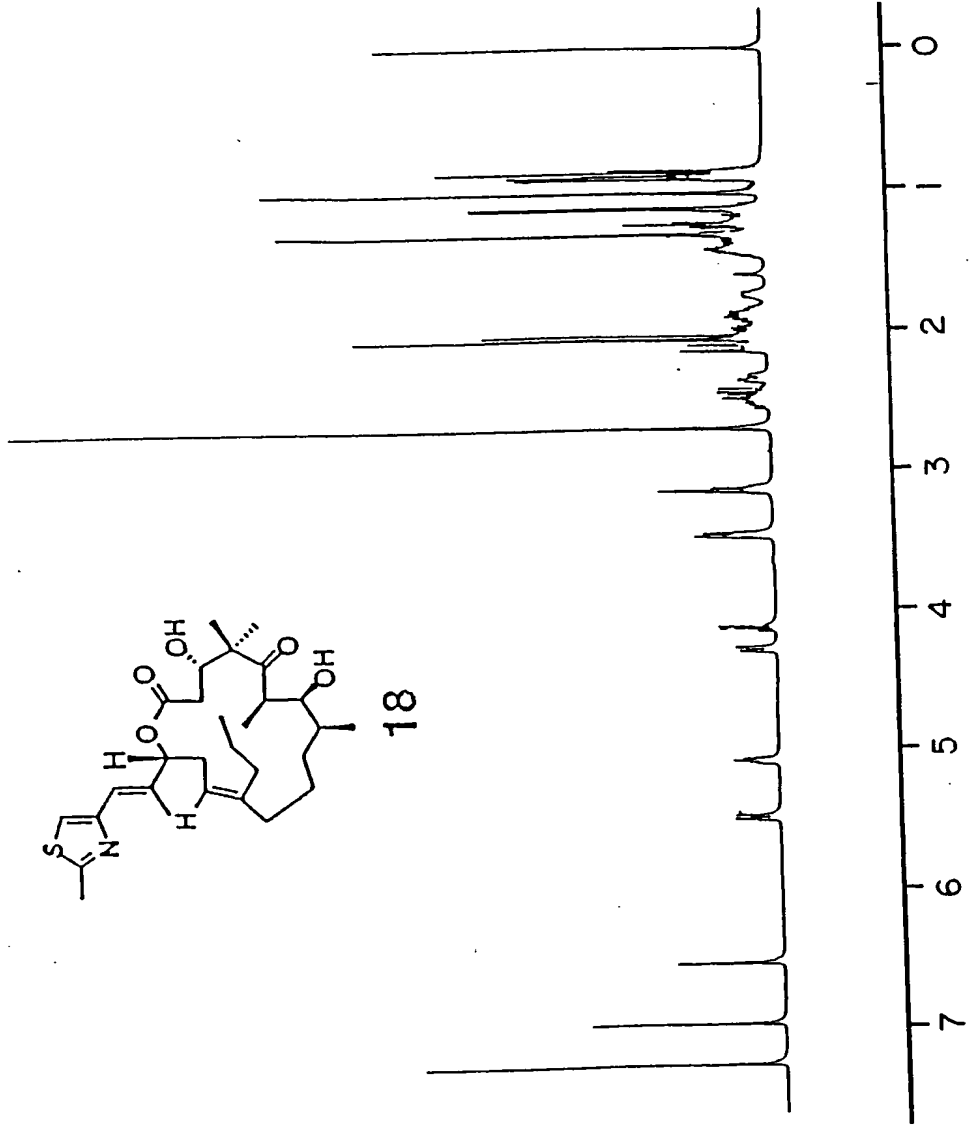
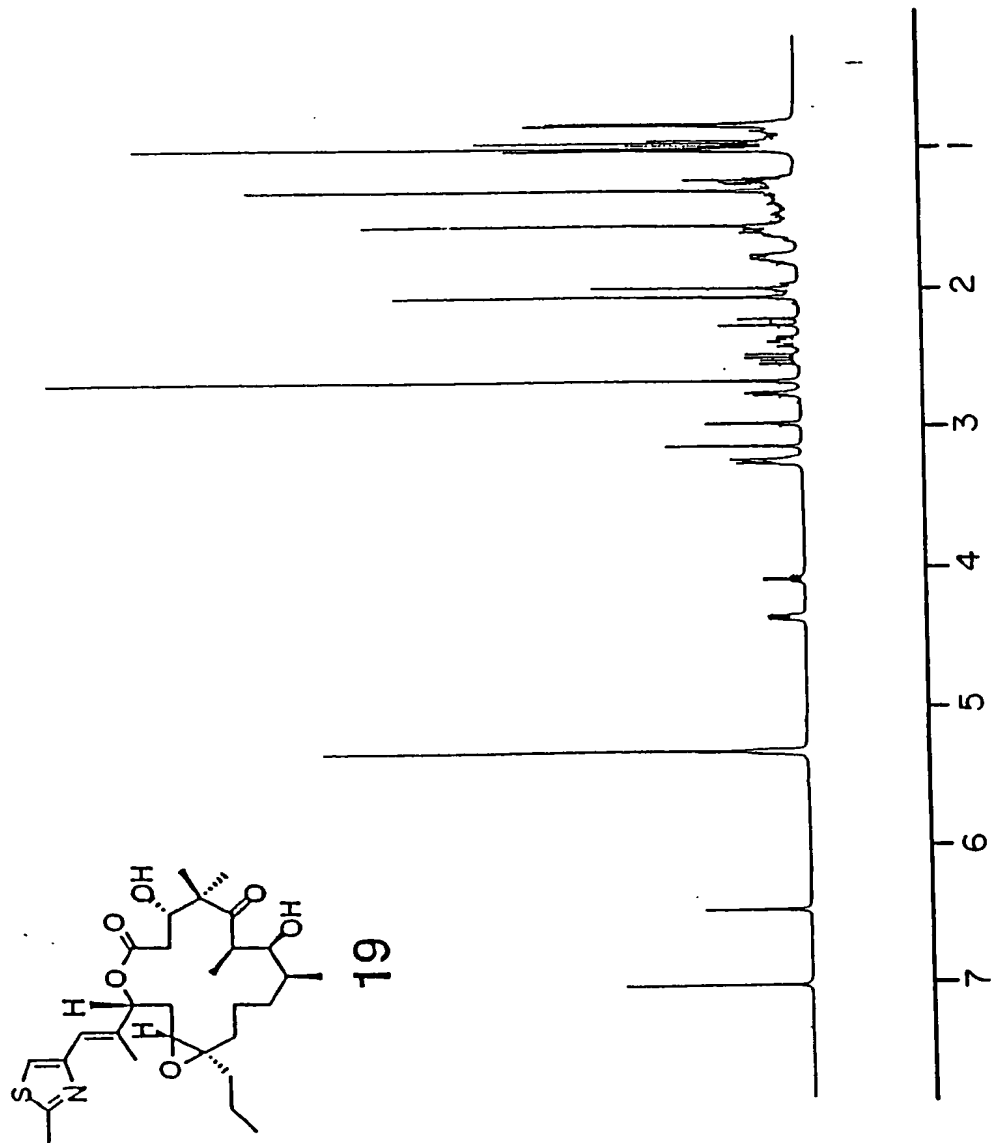
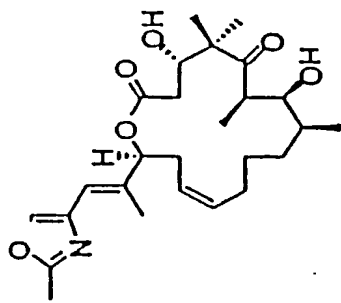


FIG. 31

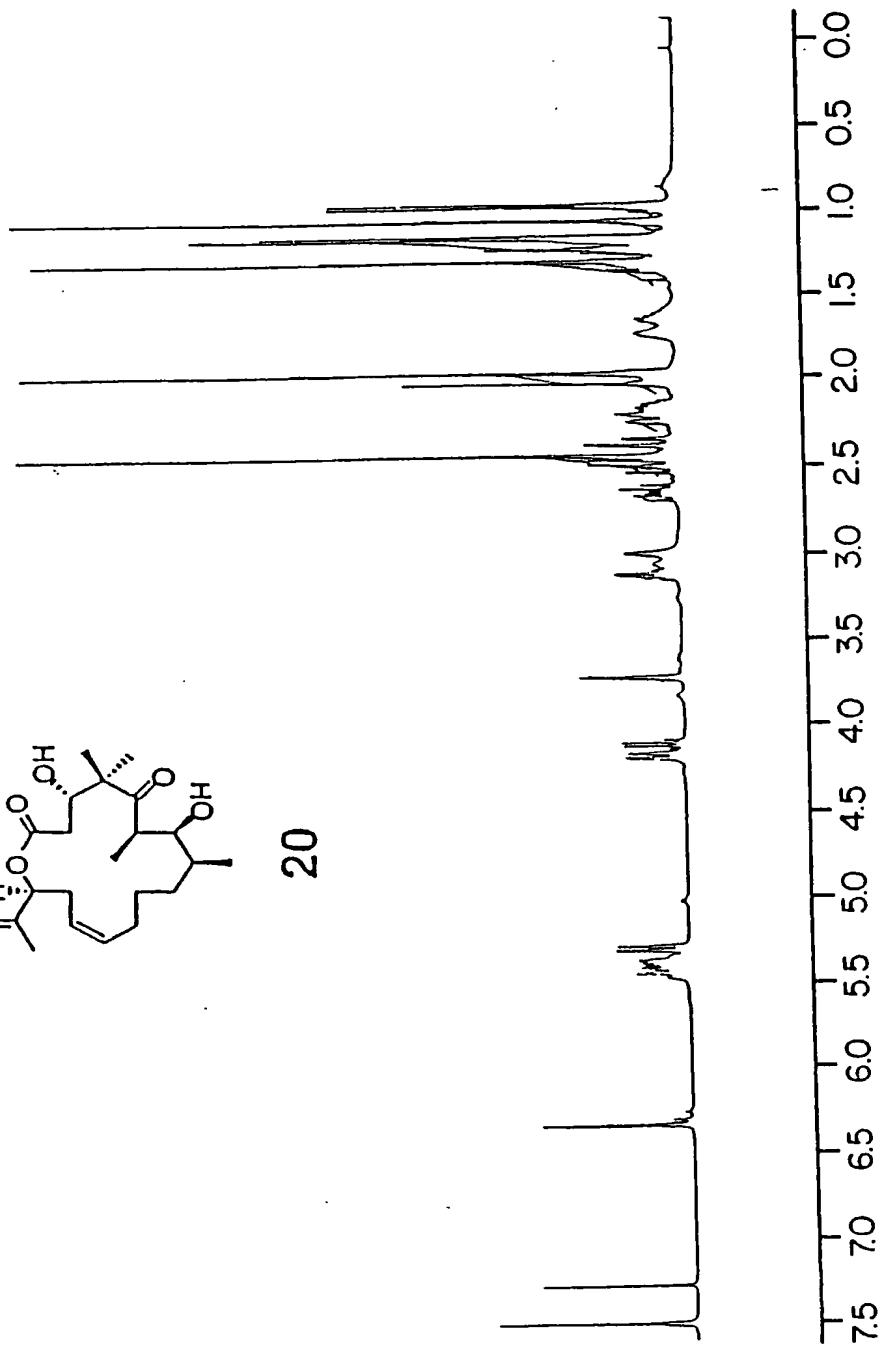


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FIG. 32

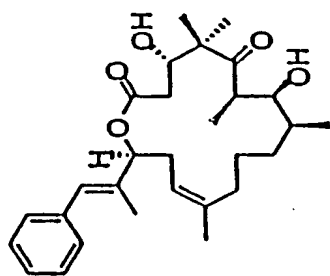


20



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FIG. 33



22

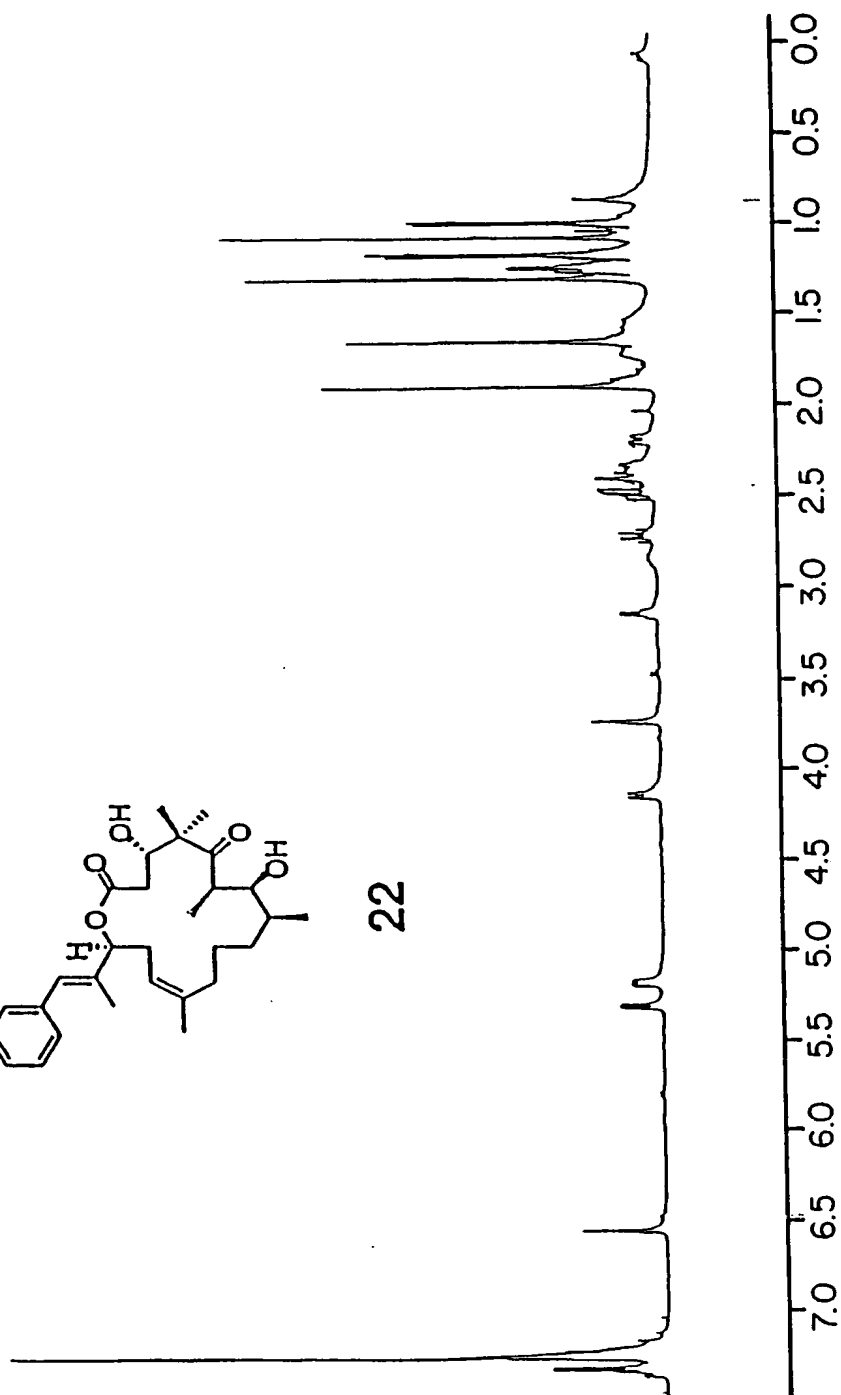
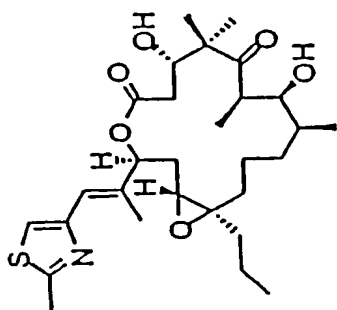
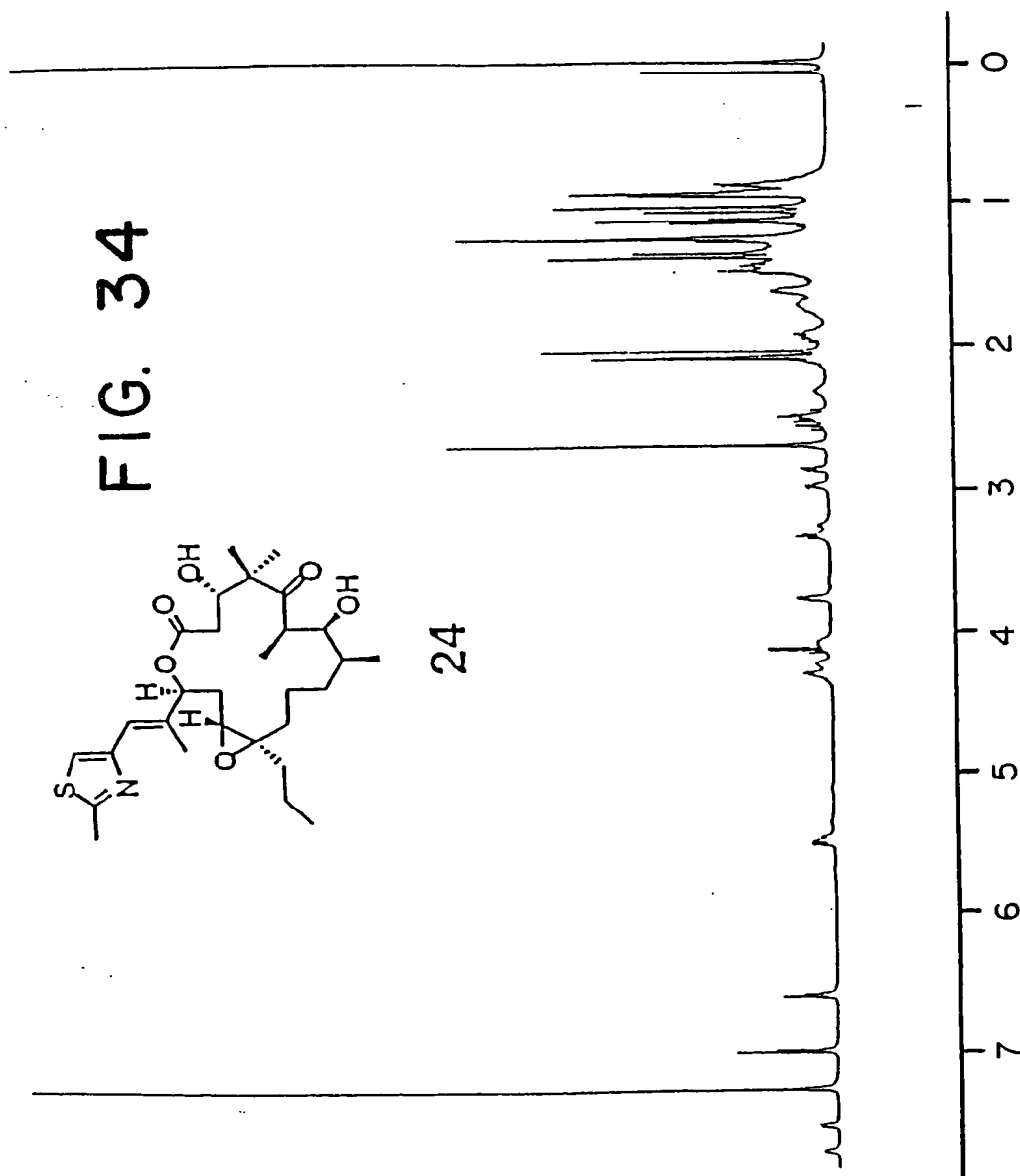


FIG. 34

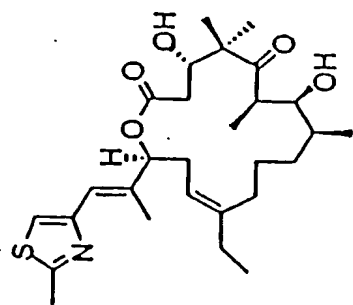


24

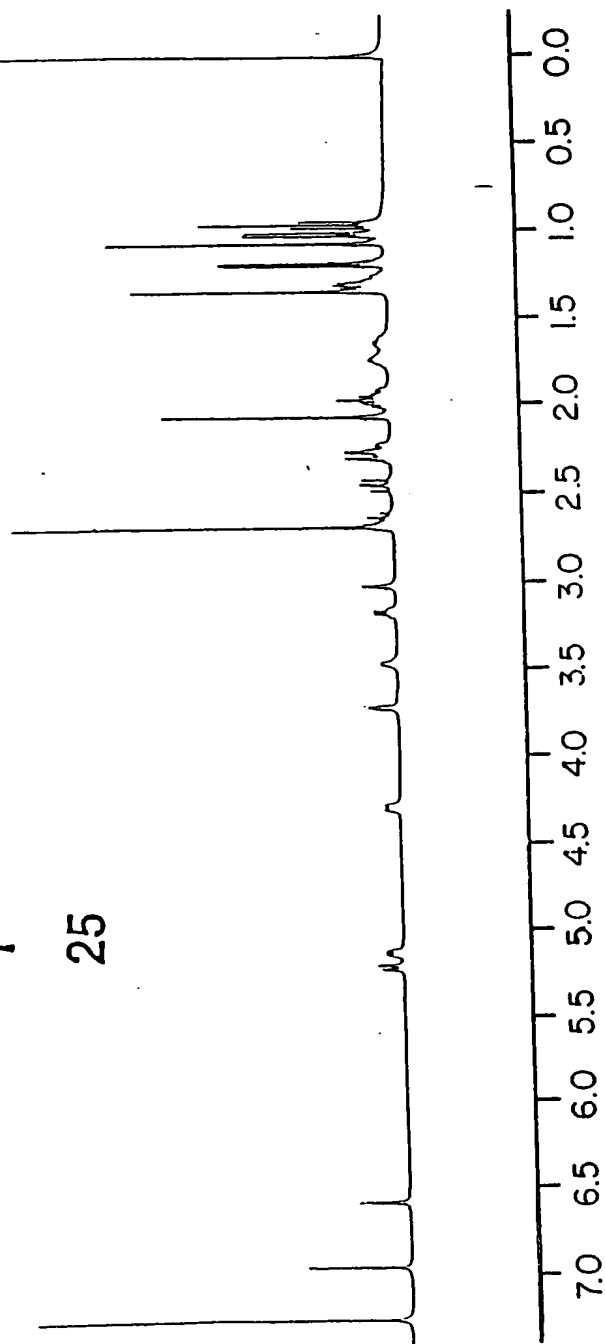


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FIG. 35

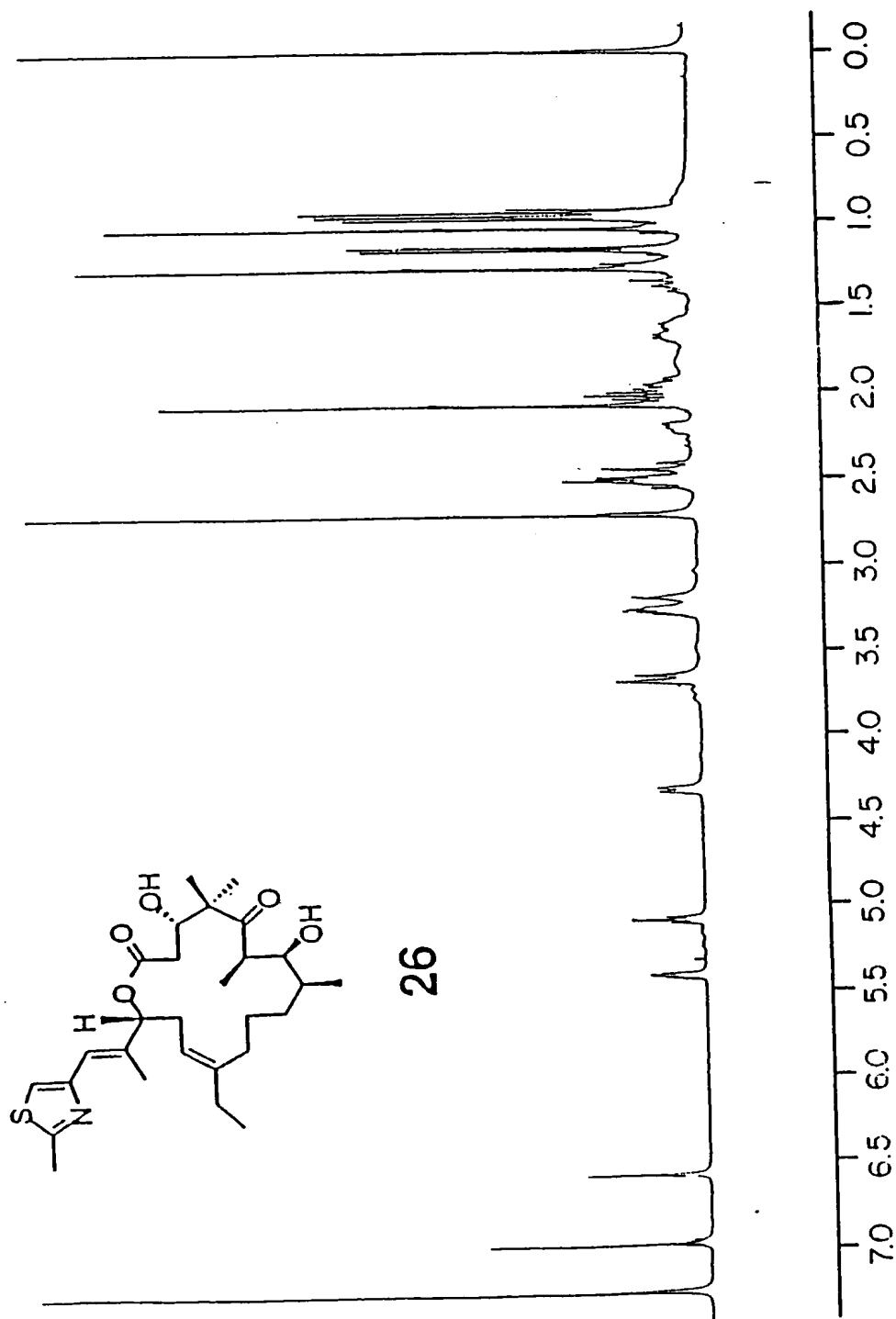


25



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FIG. 36



26

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FIG. 37

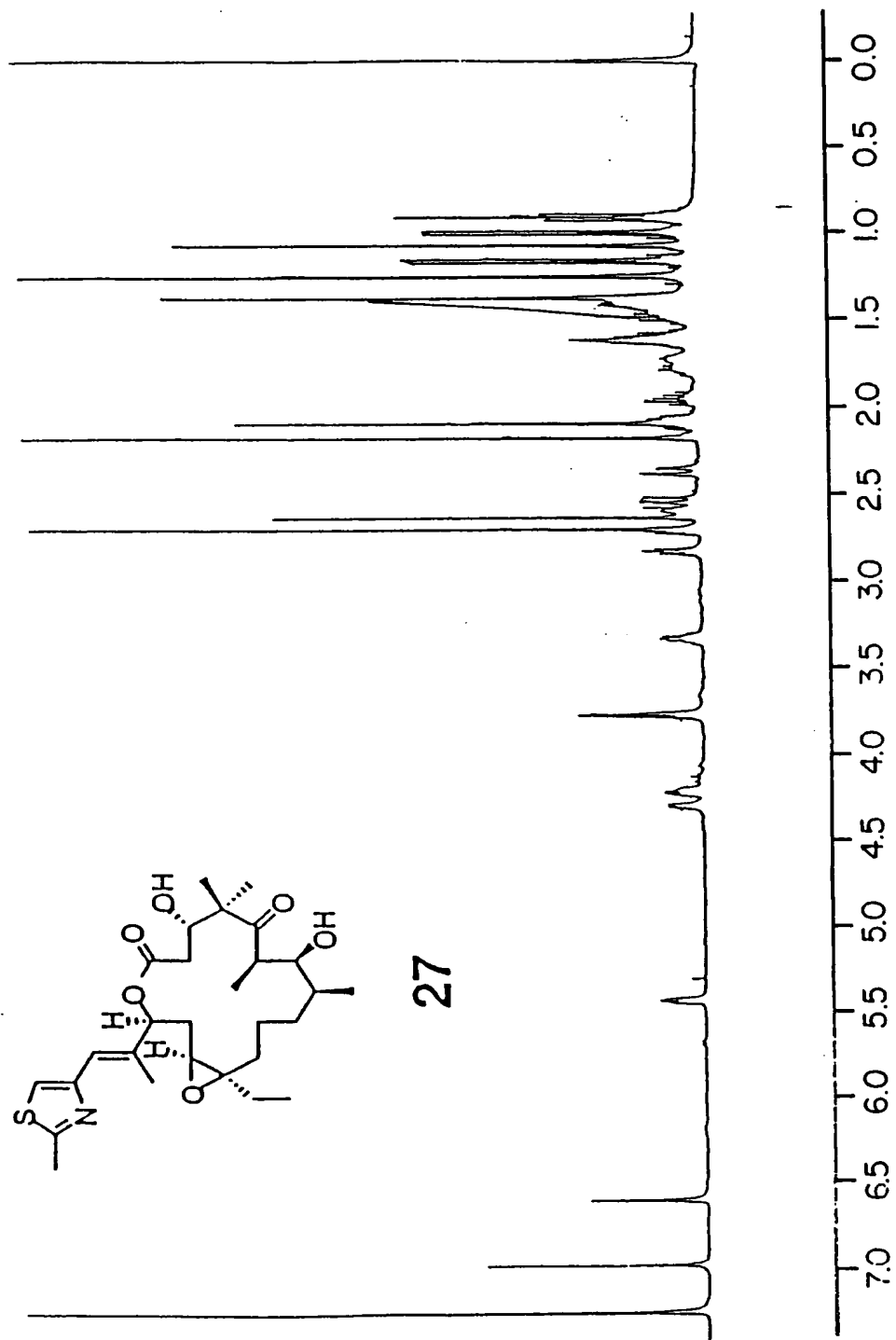
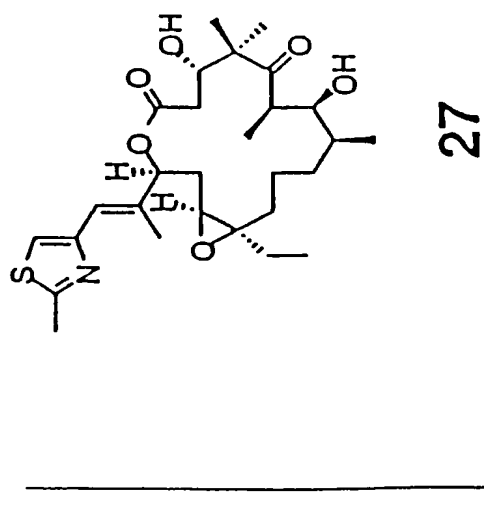
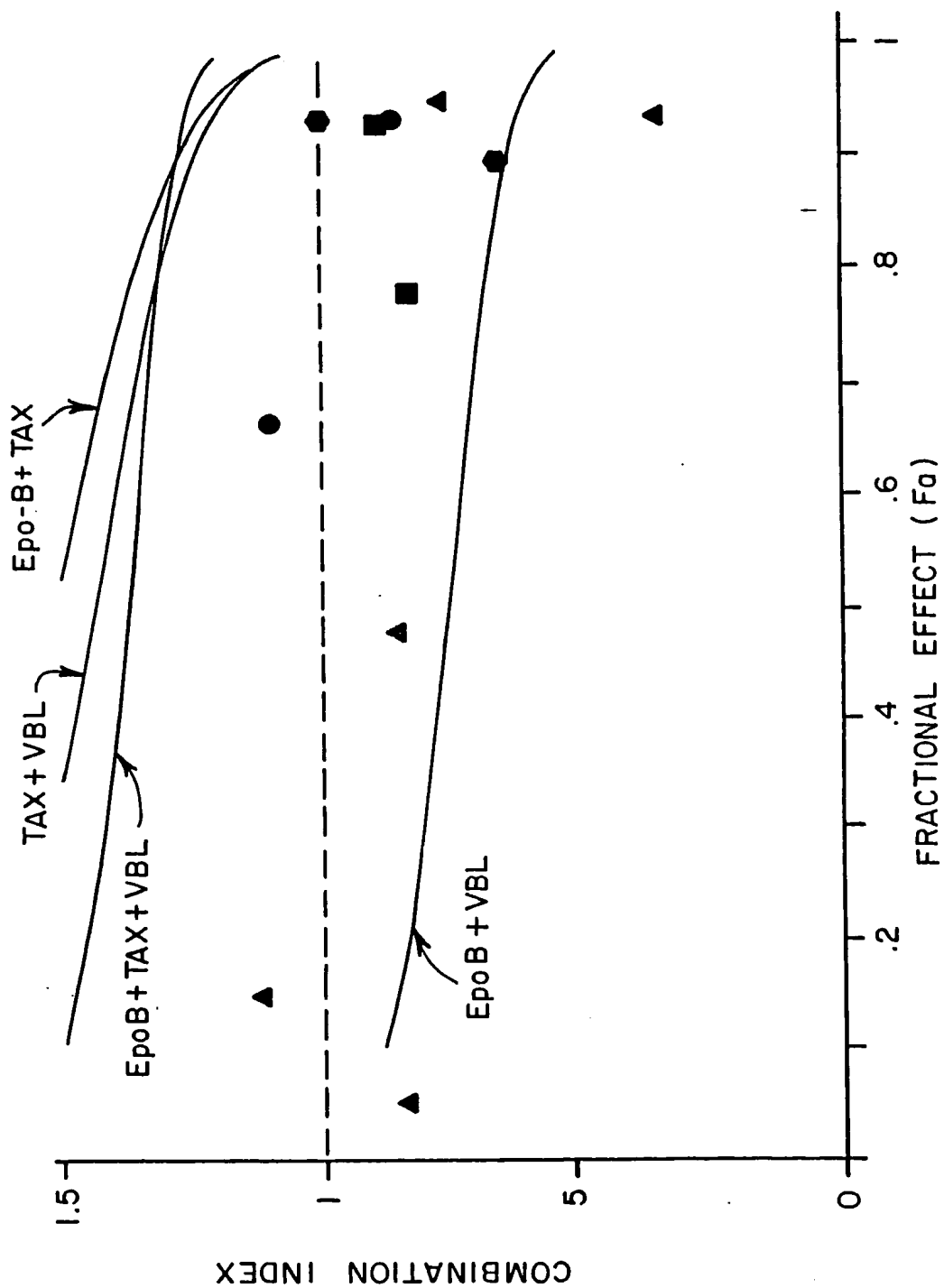
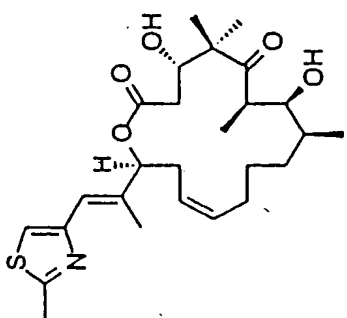


FIG. 38



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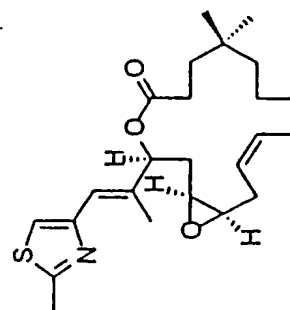
FIG. 39A



desoxyepothilone A

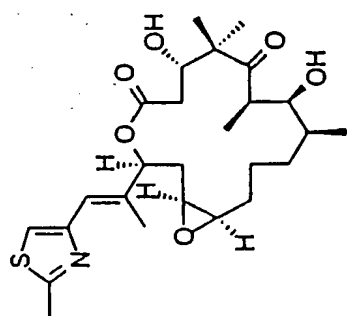
1

(0.022)
[0.012]



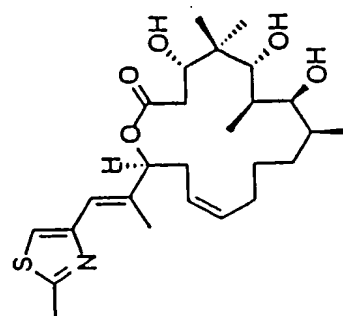
3

(271.1)
[22.4]



epothilone A

(0.0027)
[0.020]



2

(14.23)
[6.28]

4

(2.12)
[43.0]

FIG. 39B

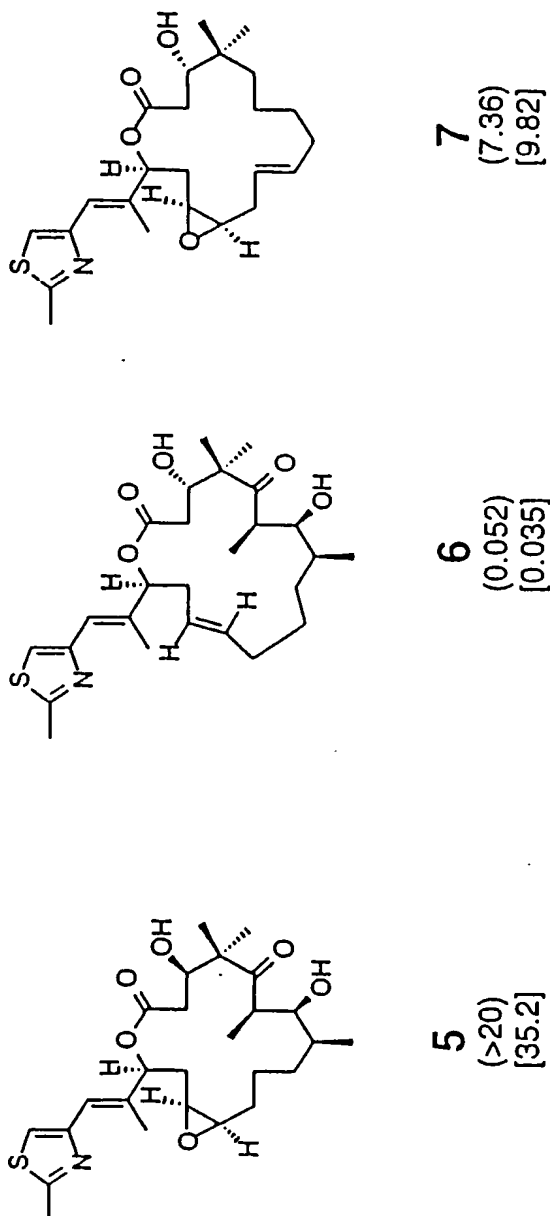
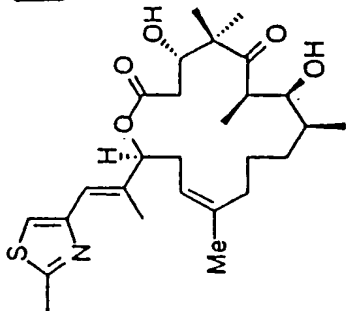
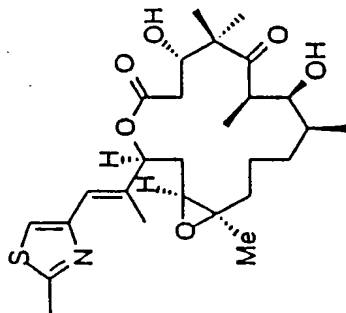


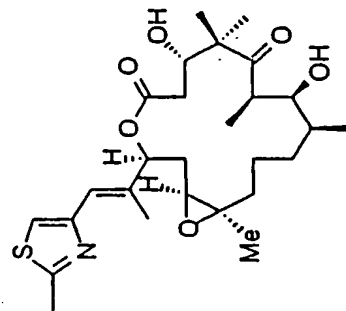
FIG. 40A



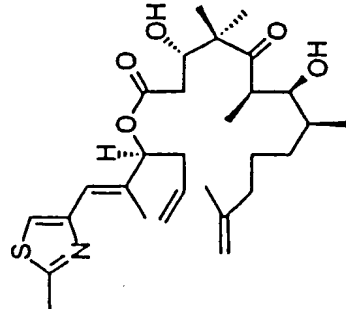
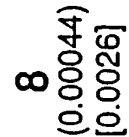
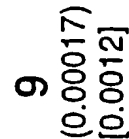
desoxyepothilone B



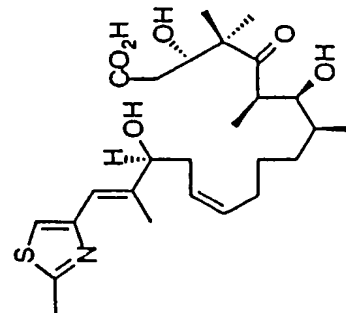
natural epothilone B



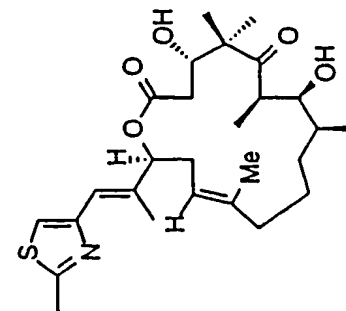
synthetic epothilone B



13
(11.53)
[5.63]



12
(0.79)
[>5]



11
(0.090)
[0.262]

FIG. 40B

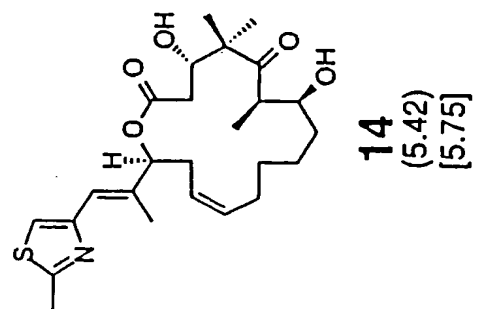
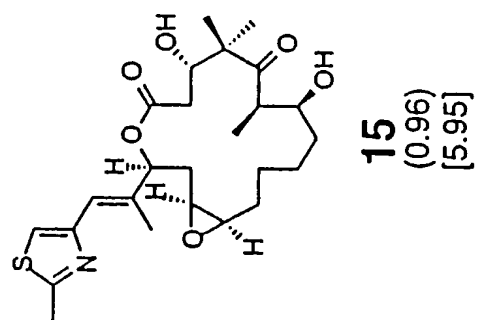
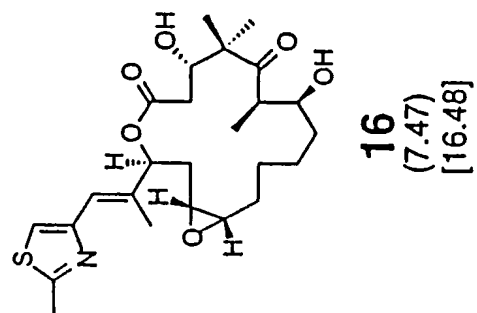
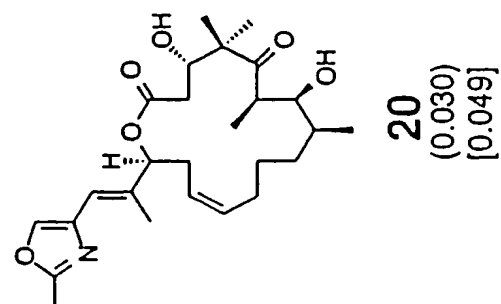
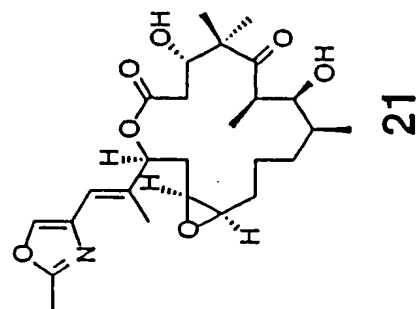
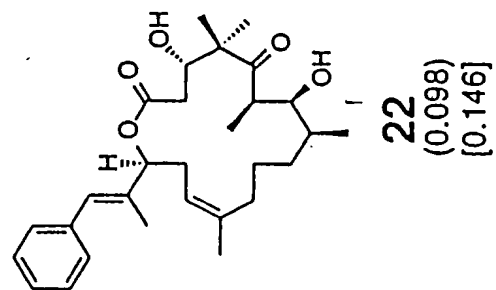
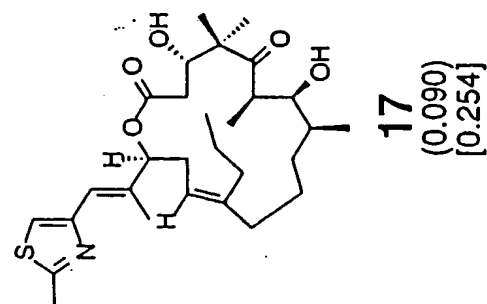
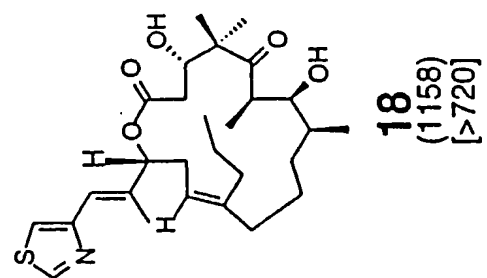
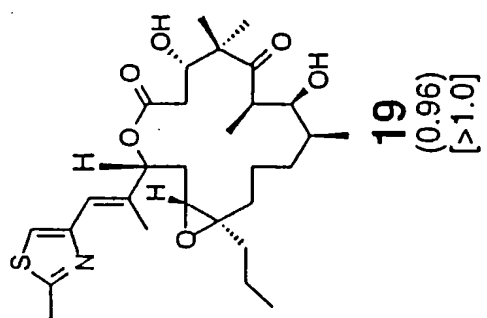


FIG. 41A



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FIG. 41B

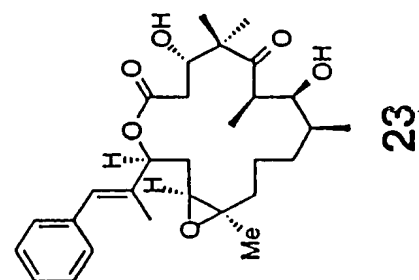
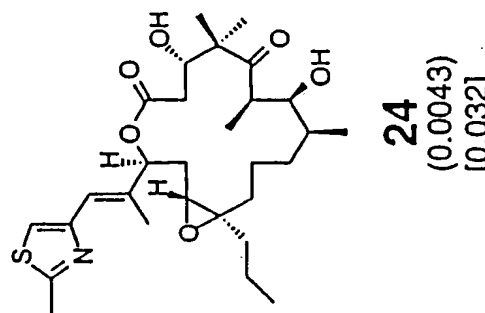
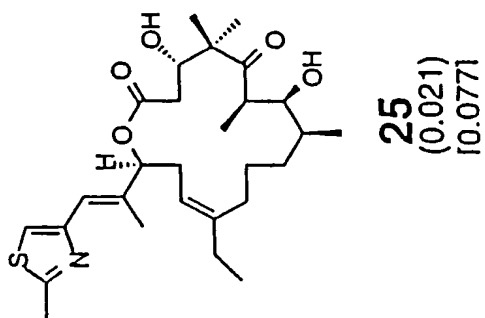
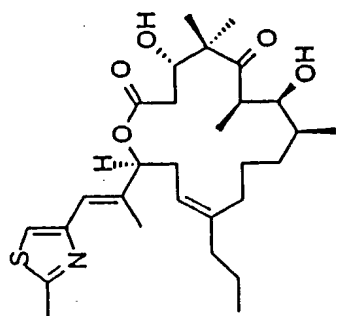
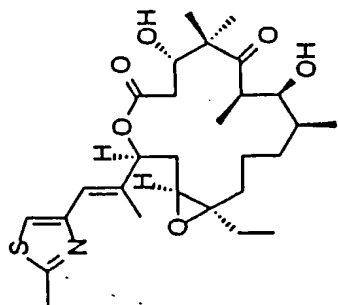


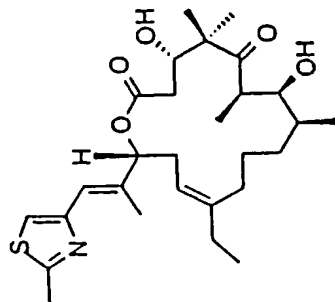
FIG. 42A



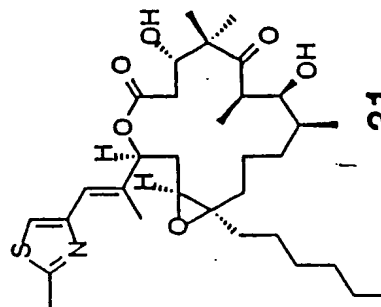
28
(0.039)
[0.067]



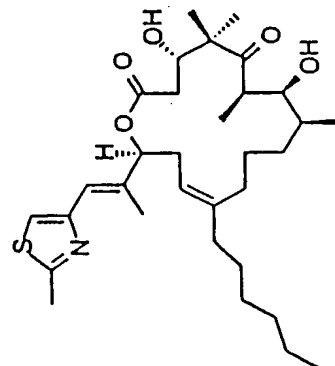
27
(0.0010)
[0.0072]



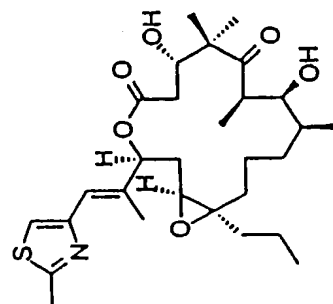
26
(0.055)
[0.197]



31
(0.027)
[0.049]



30
(0.044)
[0.108]



29
(0.0038)
[0.0064]

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FIG. 42B

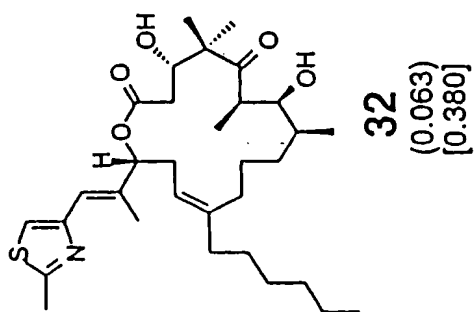
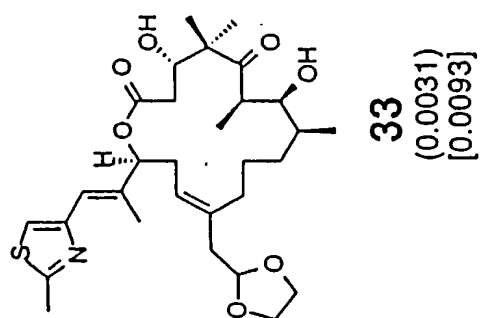
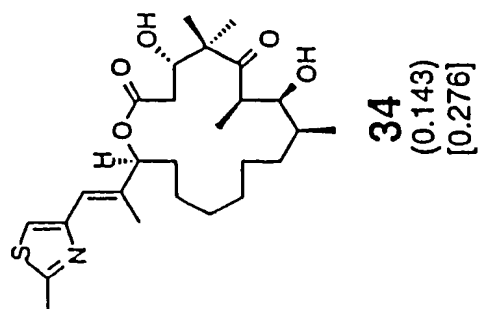


FIG. 42C

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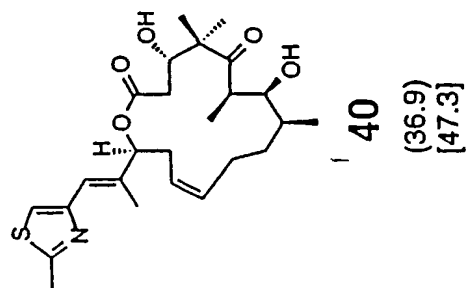
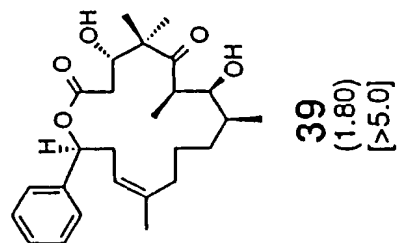
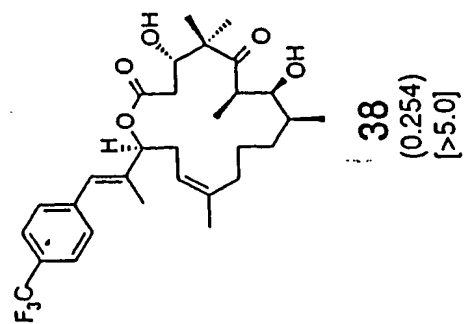
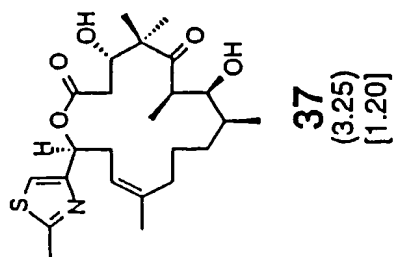
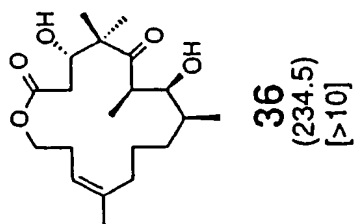
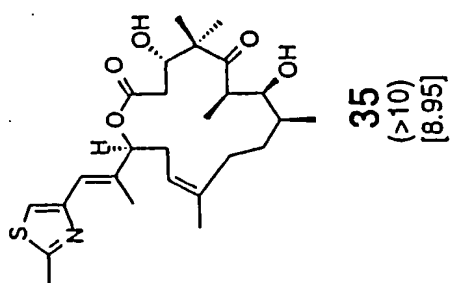


FIG. 42D

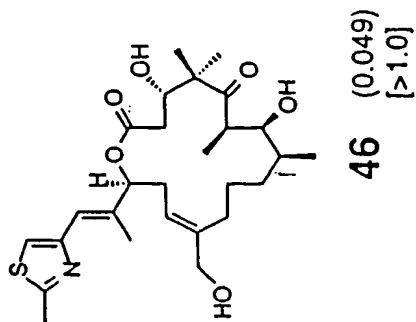
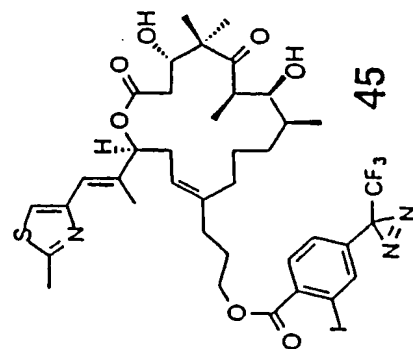
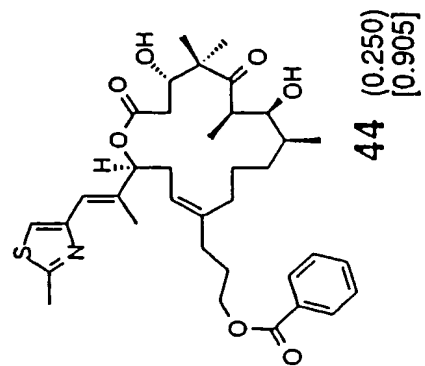
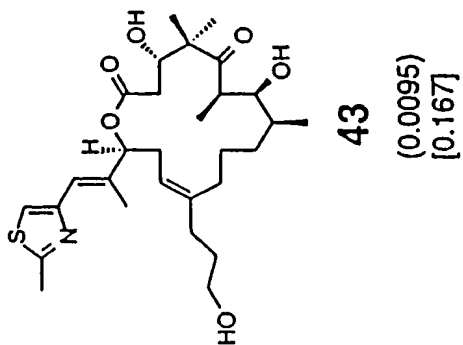
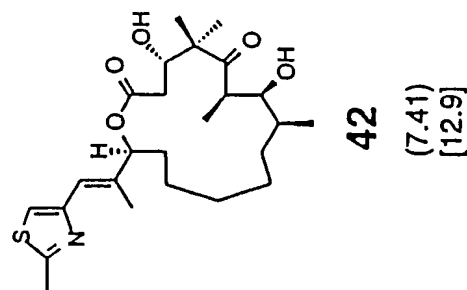
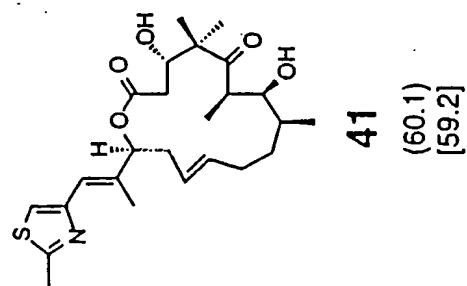
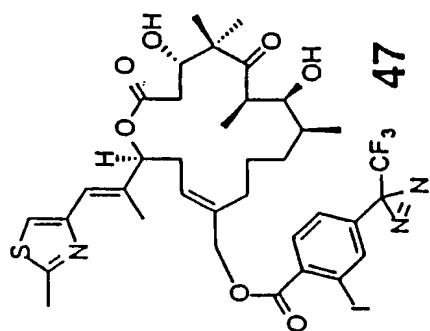
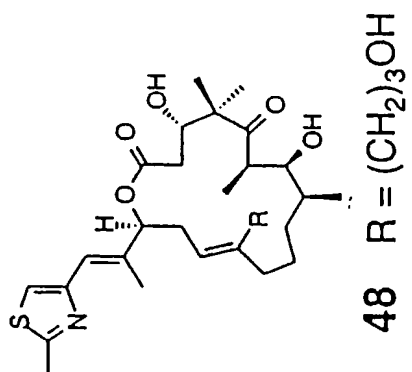
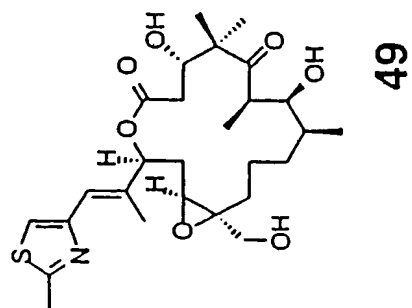
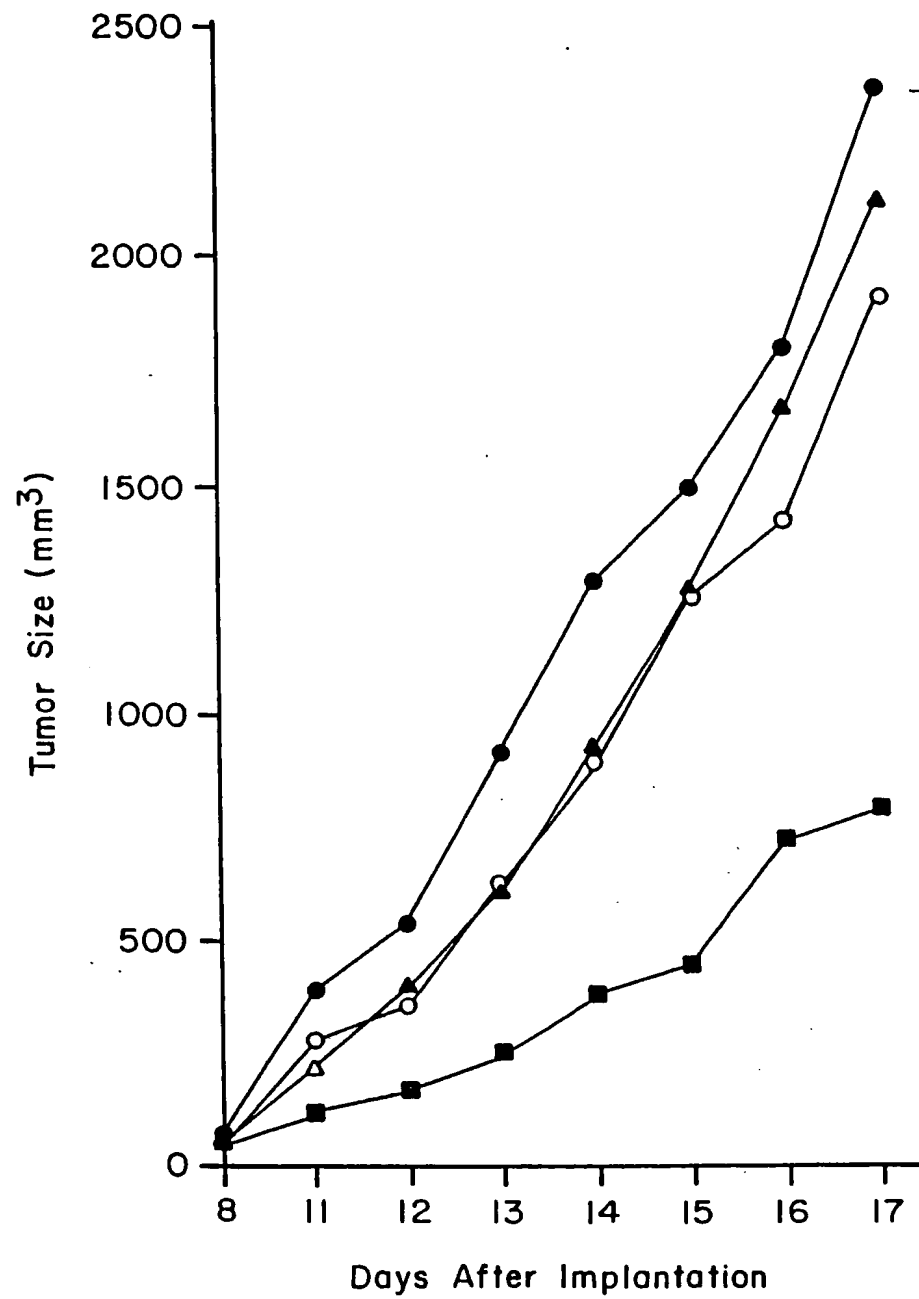


FIG. 42E



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FIG. 43 A



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FIG. 43 B

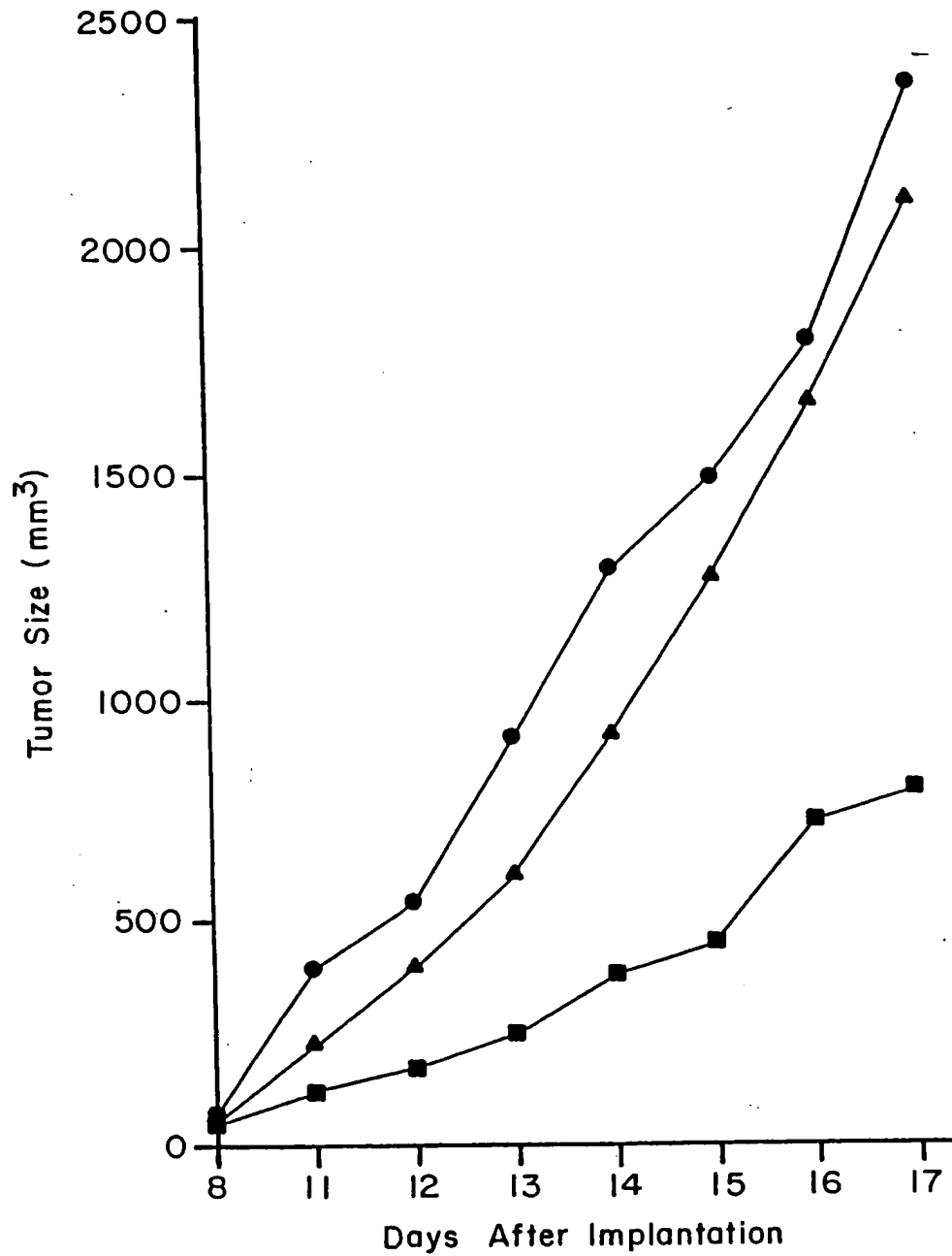
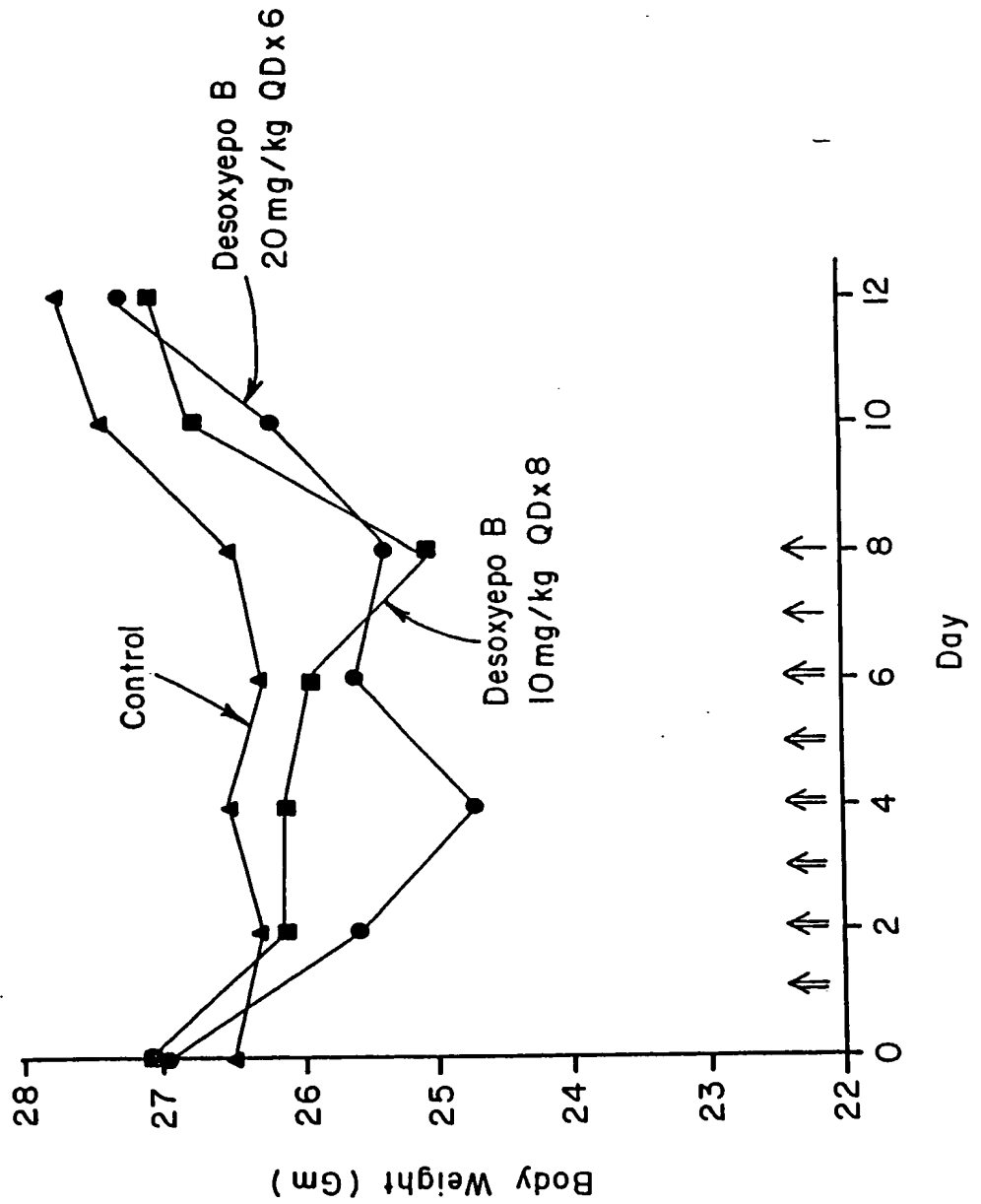
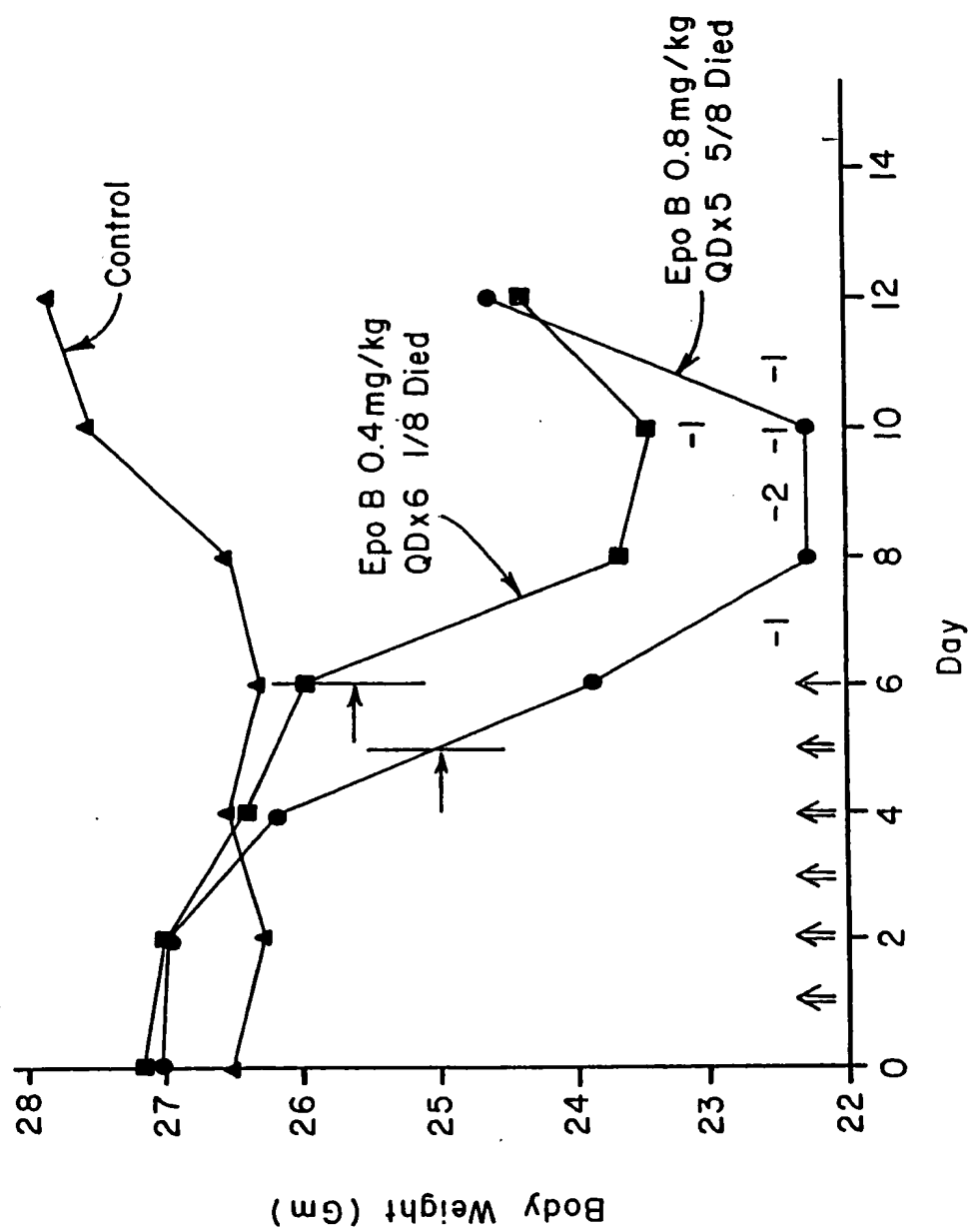


FIG. 44A



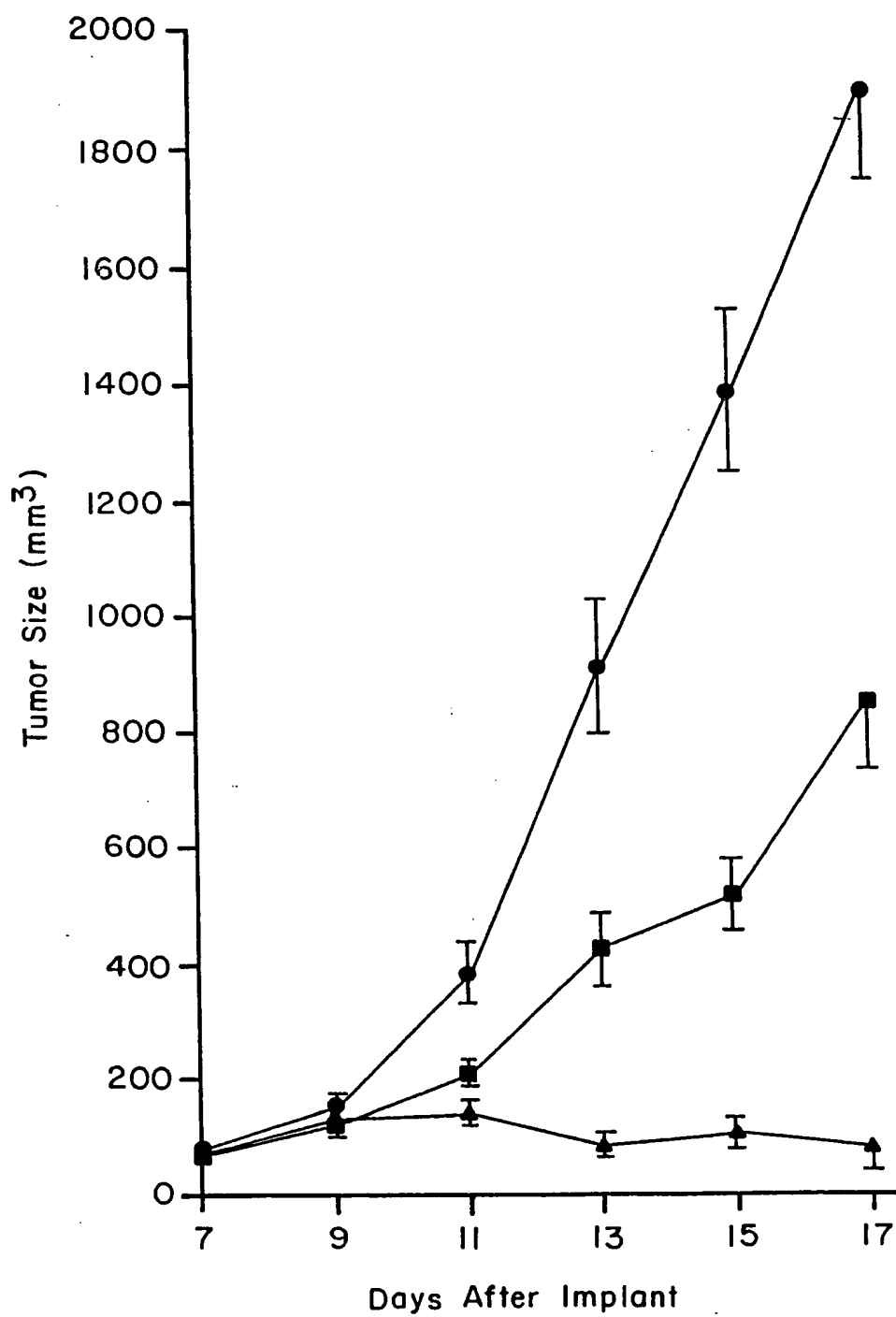
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FIG. 44B



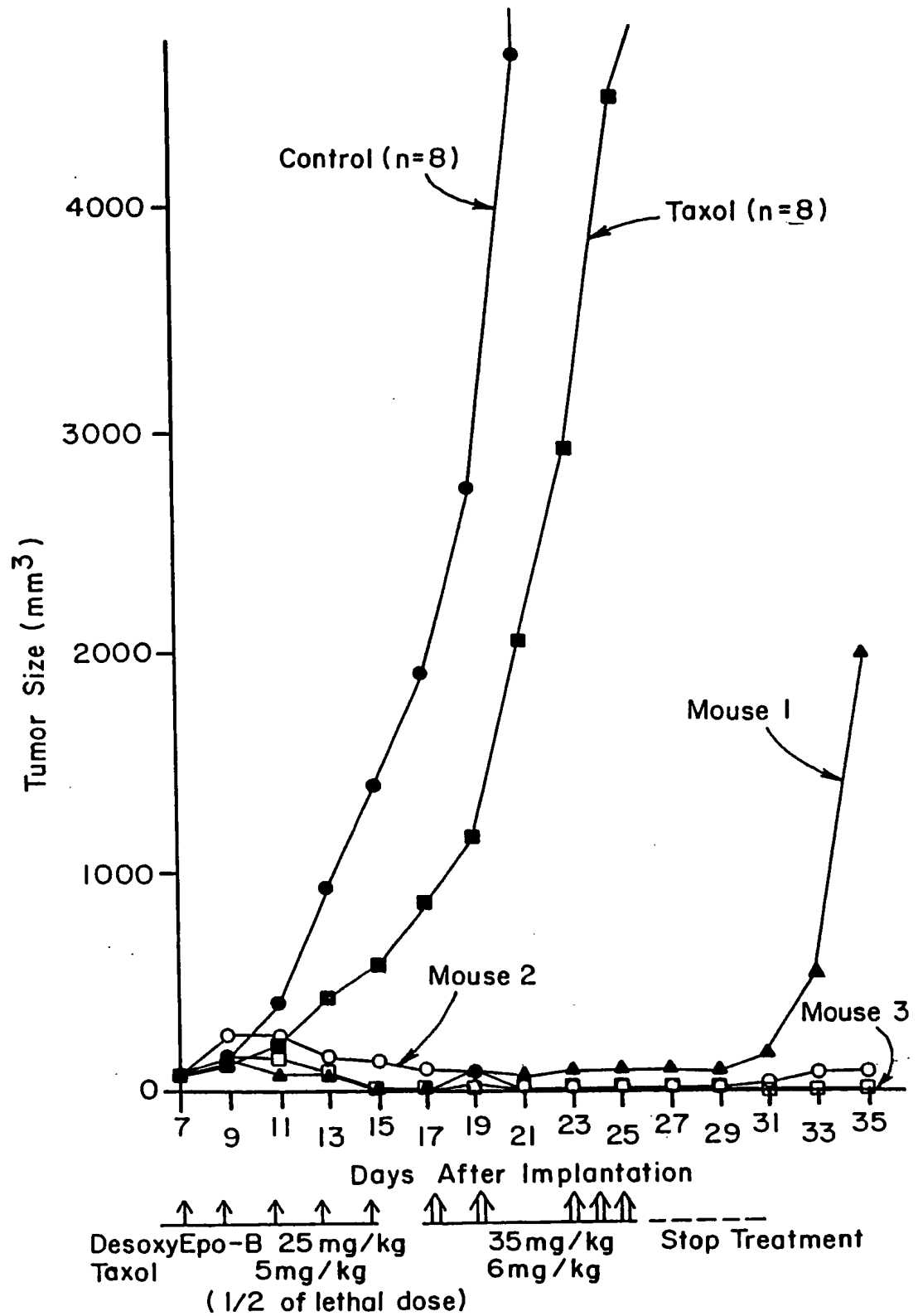
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FIG. 45A



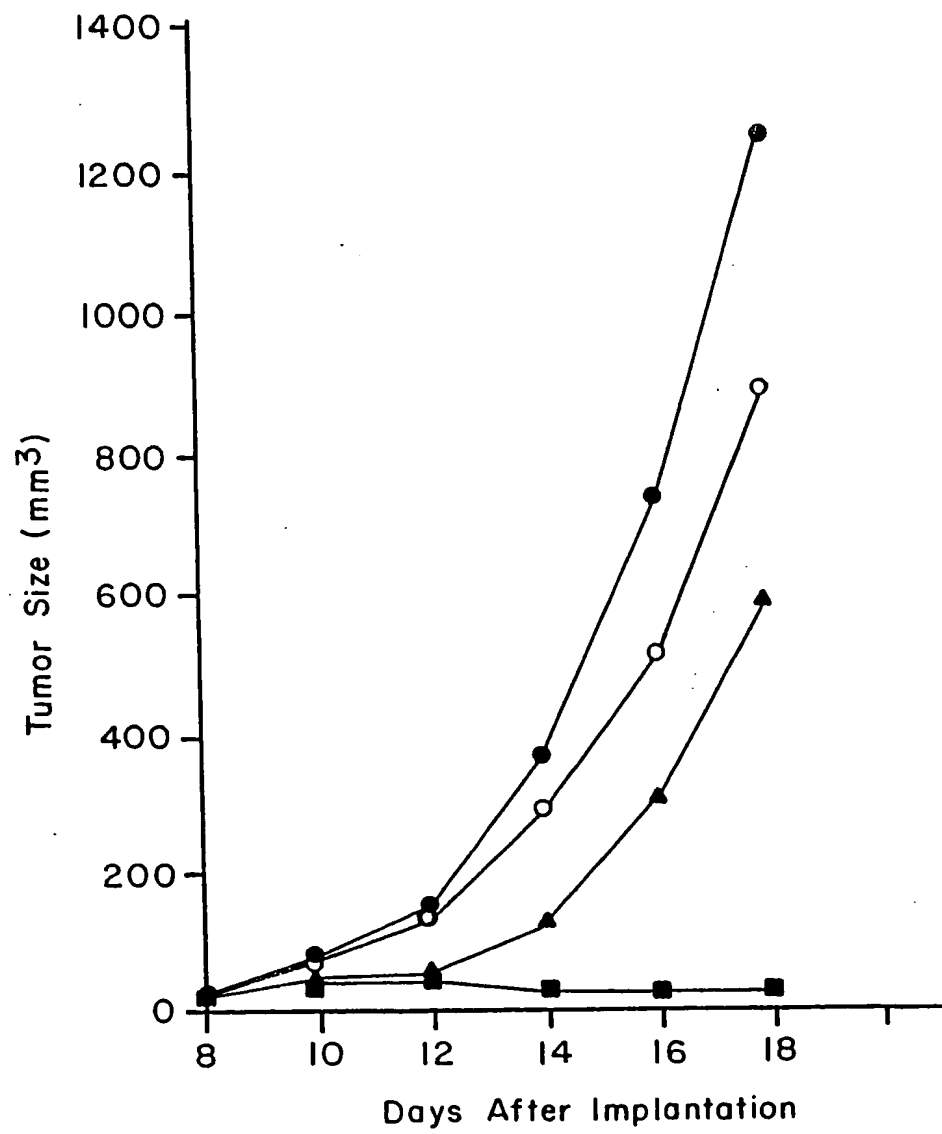
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FIG. 45 B



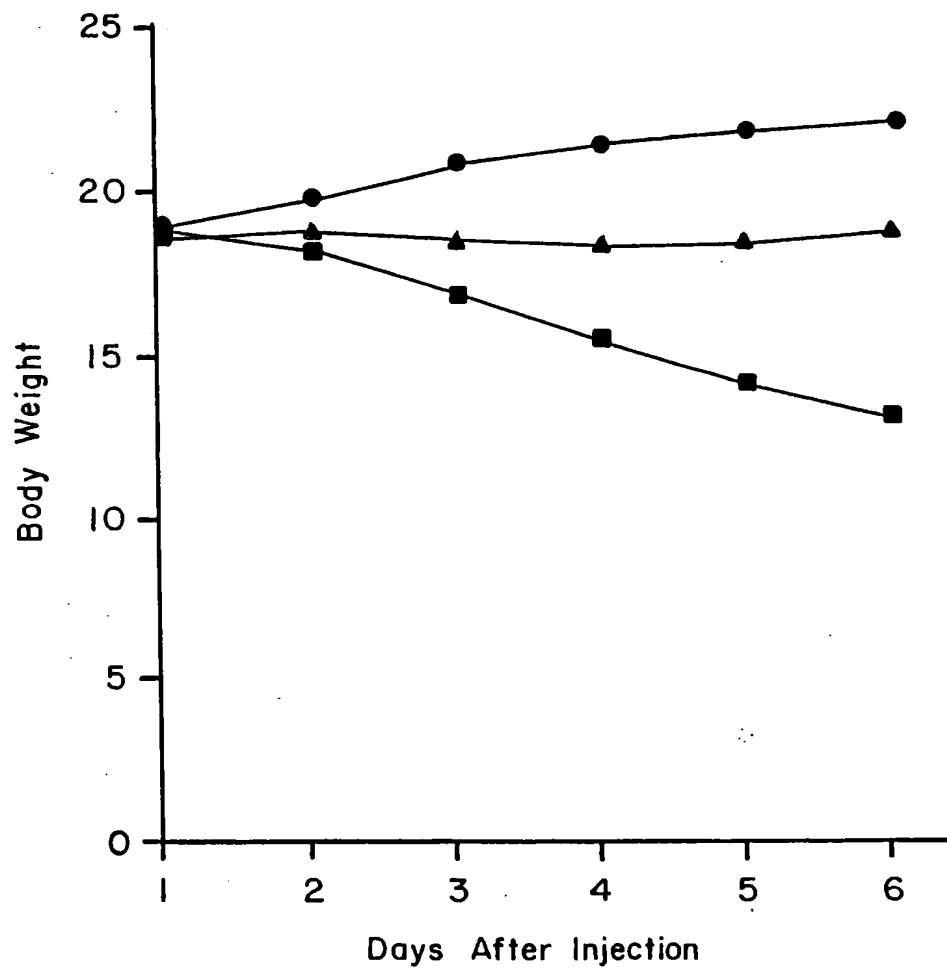
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FIG. 46



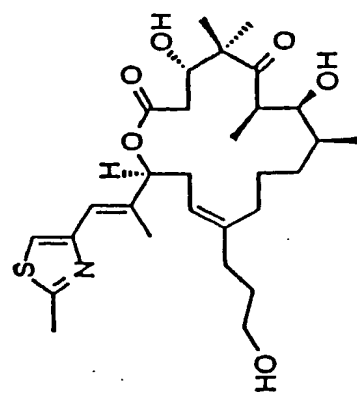
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FIG. 47

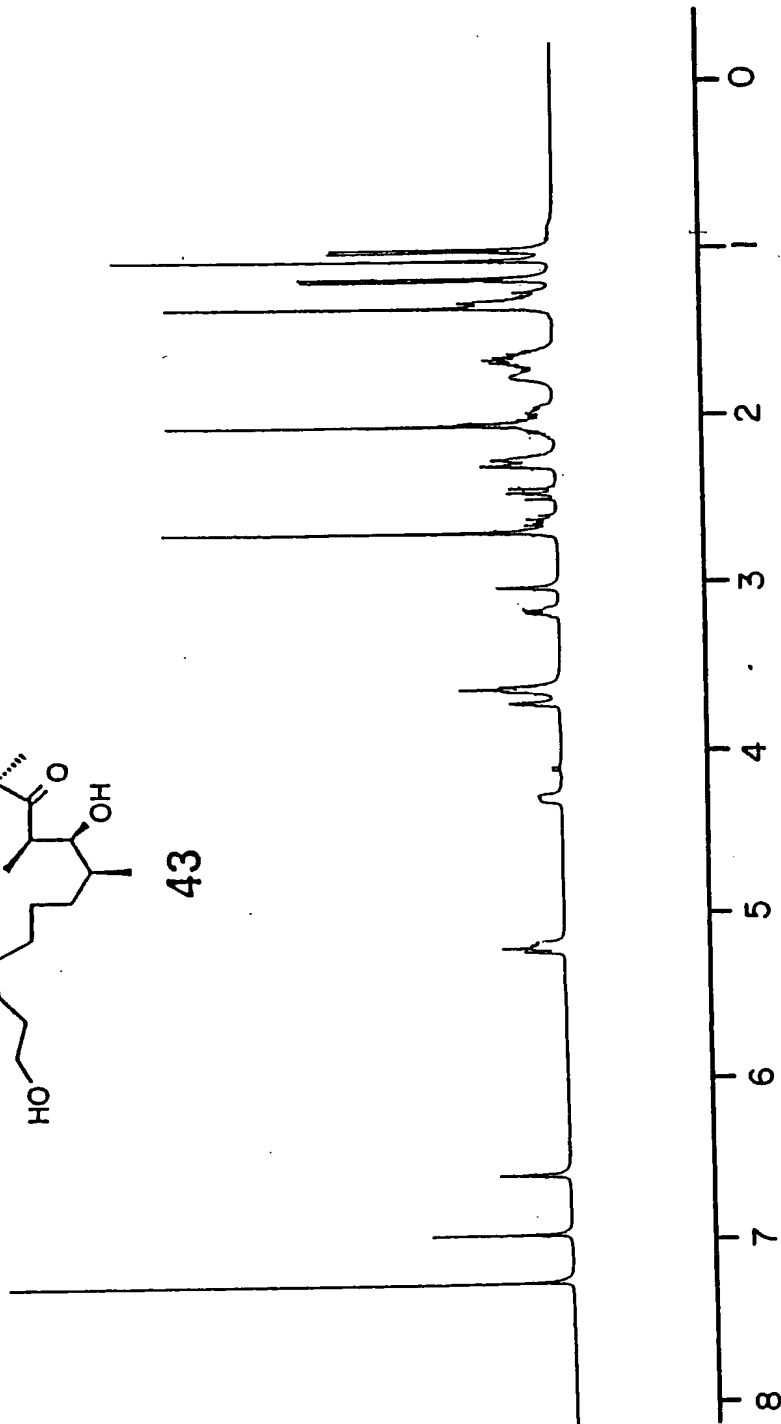


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FIG. 48

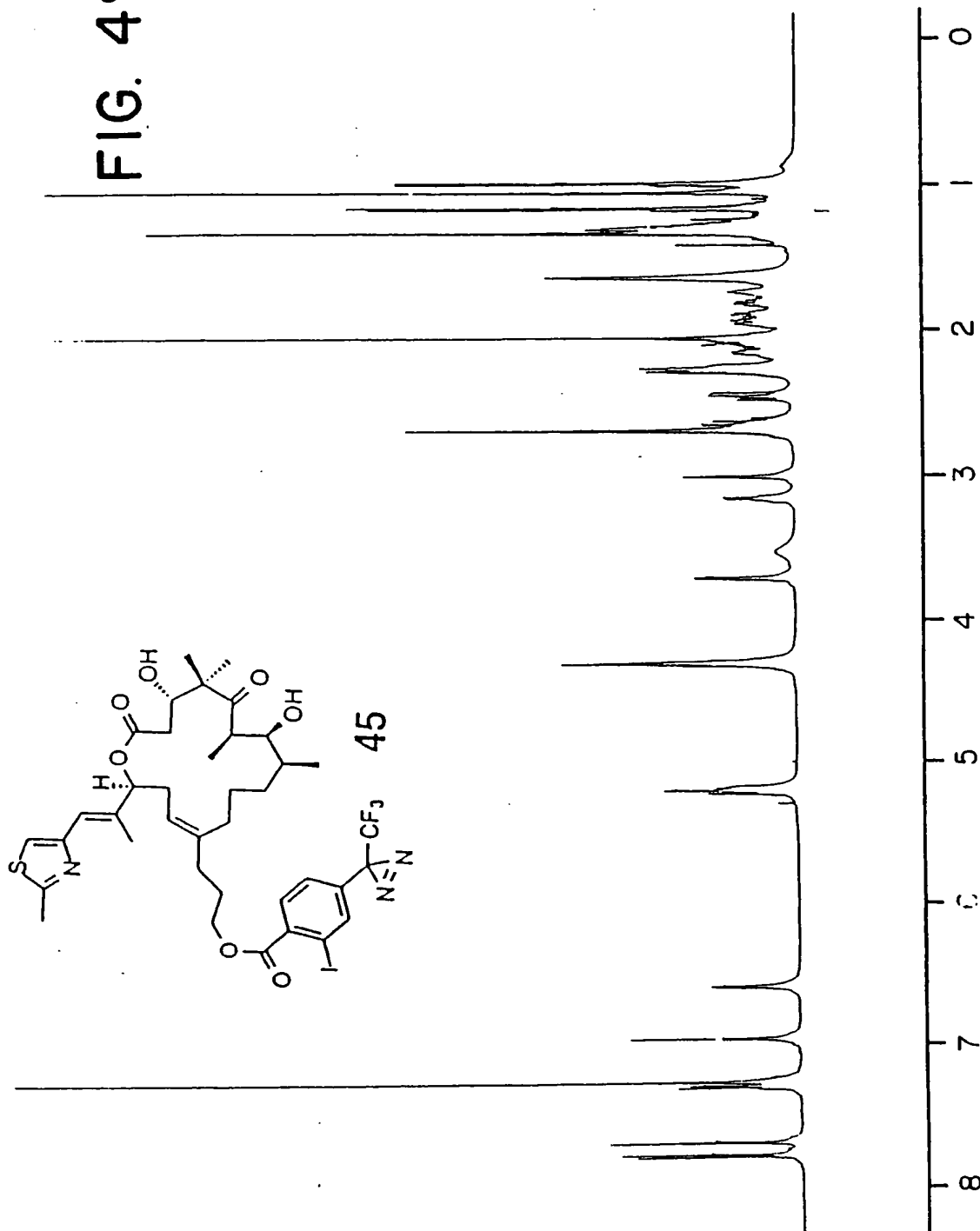


43

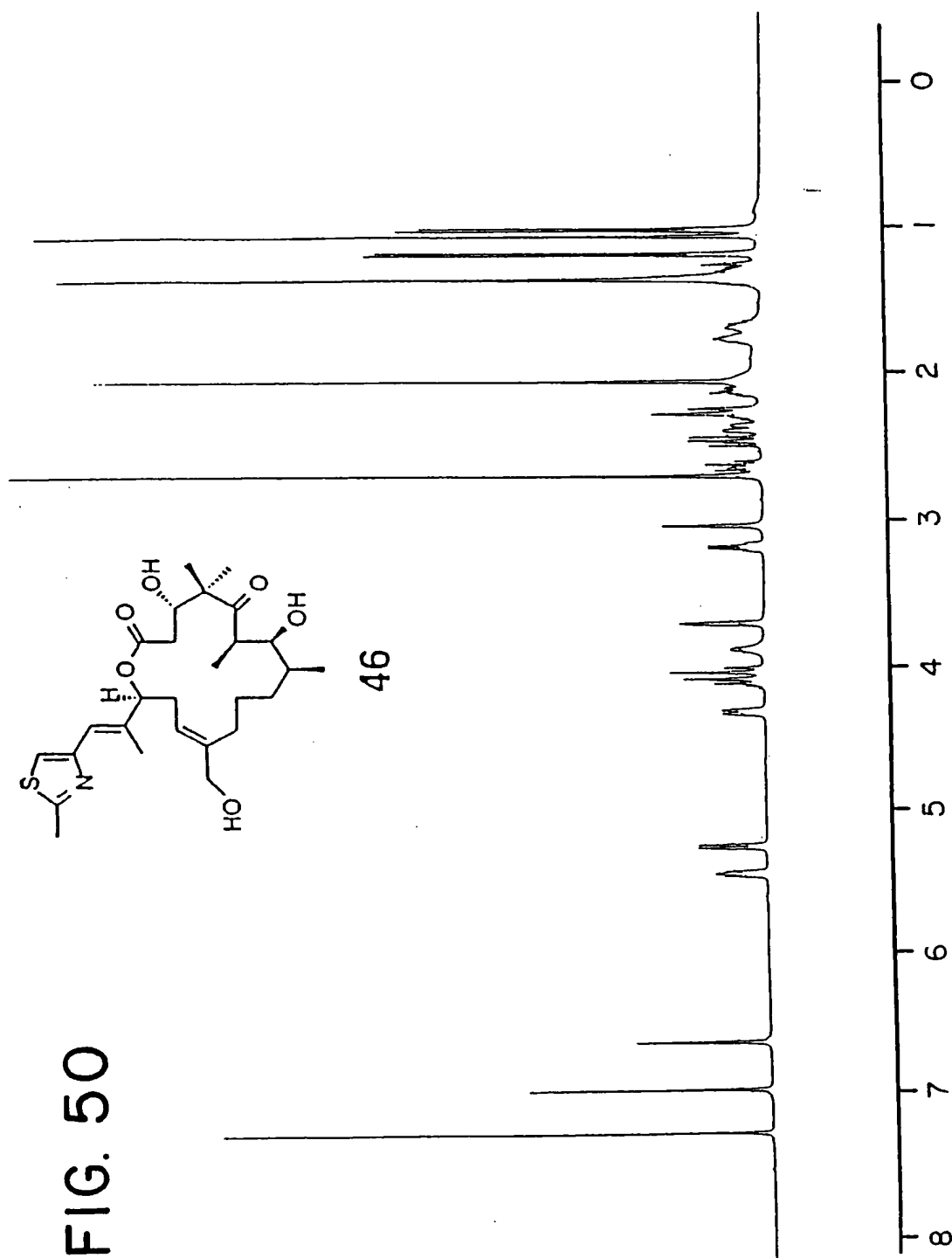


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FIG. 49



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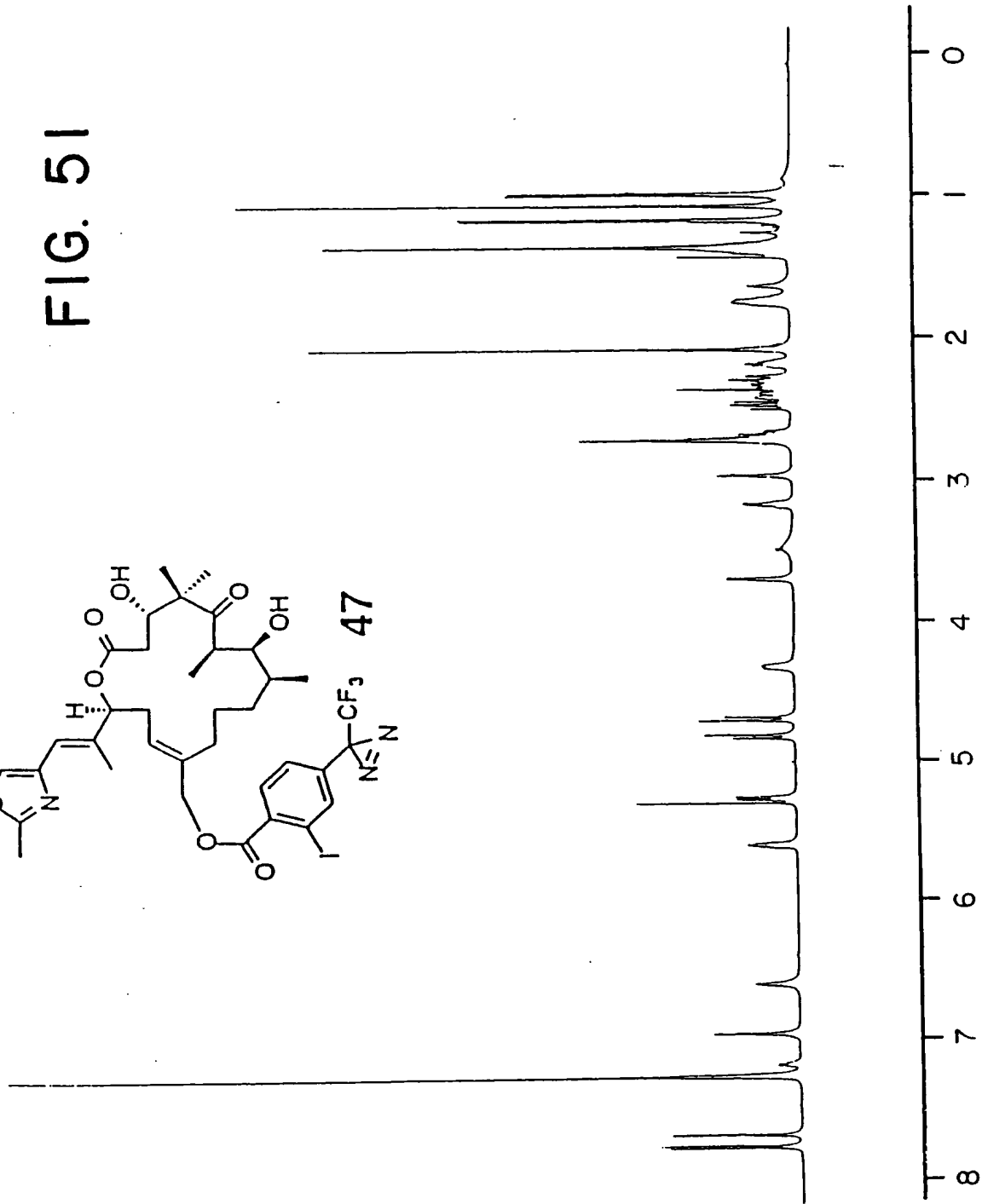
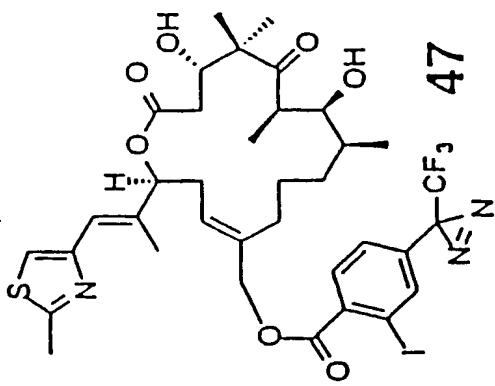


FIG. 52

